TM 11-5895-222-15

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TECHNICAL DATA

D16

OPERATOR'S, ORGANIZATIONAL, FIELD, AND DEPOT MAINTENANCE MANUAL

TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19

TECHNICAL DATA

HEADQUARTERS, DEPARTMENT OF THE ARMY
17 FEBRUARY 1961

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WARNING

HIGH VOLTAGE

is used in
this equipment.

DEATH ON CONTACT

may result if safety precautions
are not observed.

EXTREMELY DANGEROUS POTENTIALS

exist in the following units:

Power Distribution Panel	115 volts ac
Teletypewriter TT-4(*)/TG	115 volts ac
Teletypewriter Reperforator-Transmitter TT-76(*)/GGC	115 volts ac
Telegraph Terminal TH-5/TG	560 volts ac
Rectifier RA-87(*)	115 volts ac and dc
Telegraph Distortion Analyzer TDA-2	650 volts dc
Intercommunication Station LS-147C/FI	270 volts dc
Generator Set, Gasoline Engine, Trailer-Mounted PU-294/G	115 volts ac

WARNING

VENTILATION IS ESSENTIAL

Teletypewriter Operations Central AN/MGC-19 must be ventilated at all times when occupied to prevent asphyxiation of personnel.

DON'T TAKE CHANCES!

Changes in force: C 1, C 2, and C 3

2 OCT 64

TM 11–5895–222–15
C 3

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Operator's Organizational, Field, and Depot Maintenance Manual

TELETYPEWRITER OPERATIONS CENTRAL AN/MGC–19

CHANGE
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *4 August 1964*

mt 11/17/64

TM 11–5895–222–15, 17 February 1961, is changed as follows:

Note. The parenthetical reference to previous changes (example: "page 1 of C 1") indicates that pertinent material was published in that change.

Page 3 (page 1 of C 1), paragraph 2. Delete subparagraph *c* and substitute:

c. Reporting of Equipment Manual Improvements. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended changes to DA Publications) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to The Commanding General, U.S. Army Electronics Command, ATTN: AMSEL–MR–MP–P, Fort Monmouth, N. J. 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor, etc.).

Appendix I. Make the following changes.

Page 81 (page 9 of C 1). Delete all references to TM 11–957 and TM 11–5935–204–15P.

Page 82 (page 1 of C 2). Delete all references to SIG 7 & 8, TA–125/GT.

After the last reference, add:

TM 11–5805–257–12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Generators, Ringing, Hand G–42/PT, and G–42A/PT
TM 11–5815–210–15	Operator, Organizational, Field and Depot Maintenance Manual: Central Office, Teletypewriter AN/MGC–9

Page 85, appendix II, section II. Delete the following items in their entirety:

(Page 4 of C 2),	GENERATOR SET, GASOLINE ENGINE, TRAILER MOUNTED PU–474/M.
(Page 5 of C 2),	TERMINAL BOX TA–125/GT.

Page 90 (page 8 of C 2), appendix III, section II. Delete the following items in their entirety:

Federal Stock No.	Item
6115–823–2424	Generator Set, Gasoline Engine Trailer Mounted PU–474/M
5940–049–7850	Terminal Box TA–125/GT

2/0

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (2)
CNGB (1)
CC–E (7)
CofT (1)
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TSG (1)
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USAMC (5)
USAMICOM (4)
USAECOM (7)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (3)
OS Base Comd (2)
LOGCOMD (2)
USASMCOM (2)
USACDCEA (1)
USACDCCBRA (1)
USACDCCEA (1)
USACDCCEA, Ft Monmouth (1)
USACDCMSA (1)
USACDCOA (1)
USACDCQMA (1)
USACDCTA (1)
USACDCADA (1)
USACDCARTYA (3)
USACDCAVNA (1)
USACDCARMA (3)
USACDCIA (1)
USACDCSWA (1)
USASCC (4)
MDW (1)
Armies (2)
Corps (2)
USA Corps (3)
11th Air Assault Div (3)
USASTC (3)
USASTC, AD (2)
USASTC, Inf (2)
USASTC, Armor (2)
USASTC, Engr (2)
AMS (1)
Instl (2) except
  Ft Monmouth (63)
  Ft. Huachuca (10)
  Ft Gordon (5)
  Ft Hancock (5)
  WSMR (5)
Army Pic Cen (2)
1st USASA Fld Sta (5)
Chicago Proc Dist (1)
Sig Fld Maint Shops (3)
WRAMC (2)
USMA (2)
Svc Colleges (2)
Br Svc Sch (2)
GENDEP (2)
Sig Sec, GENDEP (5)
Sig Dep (OS) (12)
Army Dep (2) except
  Lexington (12)
  Sacramento (28)
  Ft Worth (8)
  Tobyhanna (12)
  Letterkenny (5)
  Charleston (3)
  Sharpe (3)
  Navajo (5)
  Savanna (5)
Army Tml (1) except
  Oakland (5)
USA Tml Comd (1)
POE (3)
USAERDL (2)
USA Cold Rgn RE Lab (2)
USAERDAW (13)
USARSOUTH Comm Sig Agcy (1)
Units org under fol TOE (2 cys each UNOINDC):

11–16	11–157
11–57	11–158
11–85	11–500 (Tms AA–AE) (4)
11–86	11–557
11–97	11–587
11–98	11–592
11–117	11–597
11–155	

NG: State AG (3); units—same as active Army except allowance is one copy to each unit.
USAR: None.
For explanation of abbreviations used see AR 320–50.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1964—750574

TECHNICAL DATA

TM 11-5895-222-15
C 2

Operator's, Organizational, Field, and Depot Maintenance Manual
TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19

CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *17 April 1964*

TM 11-5895-222-15, 17 February 1961, is changed as follows:

Page 82, appendix I. Add the last reference.

SIG 7 & 8, TA-125/GT	Department of the Army Supply Manual, Terminal Box TA-125/GT
TM 11-5815-270-15	Rectifiers RA-87 and RA-87A

Page 83, appendix II and III. Delete appendixes II and III and substitute—

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APPENDIX II

MAINTENANCE ALLOCATION

Section 1. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data is included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(*a*) *Service.* To clean, to preserve, and to replenish lubricants.

(*b*) *Adjust.* To regulate periodically to prevent malfunction.

(*c*) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(*d*) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(*e*) *Replace.* To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(*f*) *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(*g*) *Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

(*h*) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(*i*) *Overhaul.* To restore an item to *completely serviceable* condition as prescribed by serviceability standards. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(*j*) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements

using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th and 5th echelons.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding column.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, and 5th echelon.* The dagger (†) indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communications zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

Section II. MAINTENANCE ALLOCATION CHART

PART OR COMPONENT	MAINTENANCE FUNCTION	ECHELON 1	2	3	4	5	TOOLS REQUIRED	REMARKS
TELETYPEWRITER, OPERATIONS CENTER AN/MGC-19	service	x						Exterior and Interior
	inspect		x					Interior and Exterior
	test		x				1	Continuity shelter signal & power circuits except 26 pr cable assemblies Tool Code 4 replaces Tool Code 1 above 2nd ech
	test				x		4	All tests
	repair		x				2,3	Except door panel, gasket, skid, and molding strip replacement
	repair			x			2,3	Except skids and entrance door panels
	repair				x		2,3,5	All repairs
	rebuild					x	2,3,5	Shelter, S-182/MGC-19
	overhaul				x		2,3,5	
GENERATOR SET, GASOLINE ENGINE, TRAILER MOUNTED, PU-474/M								See TM 11-6115-230-15 for Maintenance Allocations
RECTIFIER, RA-87								See TM 11-5815-270-15 for Maintenance Allocations
SHELTER, ELECTRICAL EQUIPMENT, S-182/MGC-19	test		x				1	Continuity shelter signal & power circuits. Except 26 pair cable assemblies. (Tool code 4 replaces Tool code 1 above 2nd ech)
	test				x		4	All tests
	repair		x				2,3	Except door panel, gasket, skid, and molding strip replacement
	repair			x			2,3	Except replacement of skids and entrance door panel
	repair				x		2,3,5	All repairs
	rebuild					x	2,3,5	
	overhaul				x		2,3,5	
CABLE ASSEMBLY, 26 pair	test				x		4	
	repair				x		2,5	Replace cable & repair or replace connector
CONNECTOR, PLUG, ELECTRICAL, U-185/G	test				x		4	See TM 11-5815-210-15 for Maintenance Allocations
	repair				x		2,5	
CABLE ASSEMBLIES, POWER	repair						2,3	
CLOCK	repair							Ordnance item
CONNECTOR, RECEPTACLE, U-187/G								See TM 11-5935-205-15P for Maintenance Allocations
DISTRIBUTION BOX, J-1077A/U								See TM 11-6110-201-15P for Maintenance Allocations
EXTINGUISHER, FIRE								Engineer item
INTERCOMMUNICATION STATION, LS-147A,B,C,D/FI								See TM 11-5830-221-12 for Maintenance Allocations
TELEGRAPH TERMINAL, TH-5/TG								See TM 11-5805-246-20 for Maintenance Allocations
TELEPHONE SET, TA-312/PT								See TM 11-2155 for Maintenance Allocations
GENERATOR, RINGING, HAND, G-42A/PT								See TM 11-5805-257-12P for Maintenance Allocations
HANDSET, H-60/PT								See TM 11-5965-224-15P for Maintenance Allocations

PART OR COMPONENT	MAINTENANCE FUNCTION	ECHELON 1 2 3 4 5	TOOLS REQUIRED	REMARKS
AN/MGC-19 (cont)				
TELETYPEWRITER, TT-4A/TG				See TM 11-5815-206-12 for Maintenance Allocations
TELETYPEWRITER REPERFORATOR TRANSMITTER, TT-76/GGC				See TM 11-2225 for Maintenance Allocations
TERMINAL BOX, TA-125/GT				See TM 11-2138 for Maintenance Allocations

PART OR COMPONENT	ECHELON 1	2	3	4	5	TOOL CODE	REMARKS
AN/MGC (continued)							
MULTIMETER, AN/URM-105		x				1	
TOOL KIT, GENERAL MECHANICS		x	x	x	x	2	
SOLDERING IRON, TL-117		x	x	x	x	3	
MULTIMETER, TS-352/U			x	x	x	4	
SOLDERING IRON, TL-650/U				x	x	5	

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

a. This appendix lists items supplied for initial operation and for running spares. The list includes tools, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

b. Columns are as follows:

(1) *Federal stock number.* This column lists the 11-digit Federal stock number.

(2) *Designation by model.* Not used.

(3) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

(4) *Unit of issue.* The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

(5) *Expendability.* Nonexpendable items are indicated by NX. Expendable items are not annotated.

(6) *Quantity authorized. Under* "items comprising an operable equipment," the column lists the quantity of items supplied for the initial operation of the equipment. Under "running spare items" the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

(7) *Illustrations.* The "Item No." column lists the reference designations that appear on the part in the equipment. These same designations are also used on any illustration of the equipment. The numbers in the "Figure No." column refer to the illustration where the part is shown.

2. Batteries

Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
5815-021-2087		TELETYPEWRITER, OPERATIONS CENTRAL AN/MGC-19; A mobile teletypewriter operations central used as a taps relay switching center and for preparation of multi-address tape for use in Army Area Signal Center. Provides 8 full duplex or 16 half-duplex teletypewriter channels by means of voice frequency telegraph.		NX			
		ITEMS COMPRISING AN OPERABLE EQUIPMENT					
Ord thru AGC		TECHNICAL MANUAL TM 11-5895-222-15			2		
6115-823-2424		GENERATOR SET, GASOLENE ENGINE TRAILER MOUNTED PU-474/M		NX	1		
5815-230-7257		RECTIFIER RA-87 less transit cases		NX	2	9	1
5815-503-2760		REPERFORATOR-TRANSMITTER, TELETYPEWRITER TT-76/GGC		NX	14	8	2
5410-752-9659		SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19; (S-141( )/G modified)		NX	1	14	
5805-543-0012		TELEPHONE SET TA-312/PT		NX	1	9	
5815-198-4438		TELETYPEWRITER TT-4A/TG less transit case and cover		NX	1	9	2
5940-049-7850		TERMINAL BOX TA-125/GT		NX	1	8	3
5805-246-8734		TERMINAL, TELEGRAPH TH-5/TG less transit cases		NX	8	8	1
		SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19					
4210-727-8111		AXE, PICK HEAD: 2-3/4 lbs; American Logging Tool Co p/n 276			1	11	1
7520-753-4807		BASKET, WASTEPAPER: Erie Art Metal p/n 36			8	9	3
6130-120-1020		BATTERY, DRY BA-30			4		
7920-811-1614		BRUSH, DUSTING, BENCH: Osborn Mfg p/n 378			1	6	
5995-823-2715		CABLE ASSEMBLY AND REEL: consists of CX-4566/G and Reel RC-435/U			1	4	
4940-752-2474		CABLE ASSEMBLY, POWER, ELECTRICAL: 15 ft lg; 1 Hubbell No. 9756 conn one end, 1 St-Carl conduit outlet other end; Sig dwg SM-D-350967			1	2	1
5995-752-2548		CABLE ASSEMBLY, POWER ELECTRICAL: 15 ft lg; 1 conn plug C6-60 one end, other end skinned and tinned; Sig dwg SM-D-352157			1	2	2
5995-682-3322		CABLE ASSEMBLY, TELEPHONE CX-4760/U			1	2	

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
		AN/MGC-19 (continued)					
5995-752-2566		CABLE ASSEMBLY, TELEPHONE: 4 ft lg o/a; 1 ea PJ-047B plug one end, stripped and tinned; Sig dwg SM-D-383873-GR111			2	2	
5995-889-0608		CABLE ASSEMBLY, TELEPHONE: 6 ft lg o/a; f/tty; 1 ea PJ-058R one end term lugs other end; Sig dwg SM-D-384145-GR11			1	3	
5995-823-3016		CABLE ASSEMBLY, TELEPHONE: 6ft lg o/a; f/tty; lea PJ-055B one end, term lugs other end; Sig dwg SM-D-384145-GA1			1	3	
5995-752-2512		CABLE ASSEMBLY, TELEPHONE: 1-1/2 ft lg black cord; 1 PJ-047B each end; Sig Dwg SM-D-352593-GR11			15	3	1
5995-752-2497		CABLE ASSEMBLY, TELEPHONE: 4 ft lg; black cord; 1 PJ-047B plug each end; Sig dwg SM-D-352593-GR1V			7	3	2
5995-752-2517		CABLE ASSEMBLY, TELEPHONE: 1-1/2 ft lg red cord; 1 PJ-407B plug each end; St-Carl pt Sig Dwg SM-D-352594-CR11			14	3	3
5995-752-2549		CABLE ASSEMBLY, TELEPHONE: 4ft lg; red cord; 1 PJ-047B plug each end; Sig dwg SM-D-352594-GR1V			7	3	4
5410-752-2435		CABLE ASSEMBLY AND REEL: 22-1/2 in dia x 7-1/2 in w; C/O 1 Reel, cable RC-435/U and 100 ft Power Cable Assy; Sig dwg SM-D-352732			1	4	1
7105-792-6330		CHAIR, FOLDING: Emeco Corp p/n No. 3501			2	10	1
7910-753-5256		CLEANER, VACUUM: hand type; 100v, 60 cyc, single ph; Hoover p/n 2830		NX	1		
6645-800-7094		CLOCK, AIRCRAFT, MECHANICAL: 3 in face; Wakman p/n 118-12-24-W		NX	1	10	2
7210-753-3043		CUSHION, CHAIR: 16-1/2 in lg x 13-1/2 in w x 1 in thk; Sig dwg SM-C-350214			2		
6110-649-8146		DISTRIBUTION BOX J-1077A/U			1	8	4
4210-270-4512		EXTINGUISHER, FIRE, CARBON DIOXIDE: 5lb; Kiddie Model No. 5T-2		NX	1	11	2
4210-383-7128		EXTINGUISHER, FIRE, CARBON DIOXIDE: 2-1/2 lb; Kiddie Model 2-1/2 T-2		NX	1	10	3
5120-408-1481		EXTRACTOR, ELECTRON TUBE: basket type; f/7 pin miniature; Kellems Model No. TP-11-16			1	11	3
5120-293-2692		EXTRACTOR, ELECTRON TUBE: basket type; f/9 pin minature; Kellems Model No. TP-13-16			1	11	3

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
		AN/MGC-19 (continued)					
6645-752-7902		FAN,VENTILATING,PROPELLER: f/exhaust;Rotron Mfg Co. type No.KS8C2			2	16	
4130-765-2361		FILTER,AIR CONDITIONER: p/o shelter; 17-3/4 in w x 15-3/4 in h x 1-7/8 in thk; Craig p/n 15119P1			1		
6645-822-3166		FIRST AID KIT: Sig dwg SM-C-349935			1	11	4
6545-822-9917		GRIP,CABLE,JAW: bronze; approx 16 in lg; Economy model No. EQA(6-8P)			13	2	3
5120-776-9918		GRIP,CABLE,JAW: bronze;approx 12 in lg; Economy model No. EQA(26S)			12	2	4
5120-251-4489		HAMMER,HAND: blacksmith double face type; 8 lb; Woodings-Verona Tool Works p/n 15			1	11	5
4520-224-7909		HEATER,SPACE,ELECTRIC: 115 vac; Electromode p/n AAT-15A		NX	2	33	
5820-752-5357		INTERCOMMUNICATION STATION LS-147C/F1		NX	1	21	
5120-224-2510		KEY,SOCKET,HEADSCREW: f/drain plug; 5/8 in hex; 6-3/4 in lg; Standard Pressed Steel Model "unbrake" 5/8		NX	2	33	
2540-892-6243		LADDER,VEHICLE BOARDING MX-3391/G: Sig Dwg SC-DL-IC8736A;			1	12	1
6230-729-9614		LANTERN,ELECTRIC: Justrite p/n 2106-7			1	32	
4940-752-2525		LEAD,ELECTRICAL: used f/grounding; 1-1/2 in w x 122 in lg o/a;Sig dwg SM-B-352166C			2	2	5
6230-615-5385		LIGHT,EXTENSION: 25 ft lg; woodhead p/n 506KS25-16-2SJ			1	2	6
5340-802-7406		PADLOCK: p/o shelter; incl key; Yale p/n 774-1/2					
5120-392-8355		PIN STRAIGHTENER,ELECTRON TUBE: tenite body w/2 steel inserts;f/7 and 9 pin tube; General Cement p/n 8655			1	11	8
5975-224-5260		ROD,GROUND MX-148/G:			2	11	9
7520-162-6178		SHARPENER,PENCIL: Boston type L			1	11	10
6210-754-8134		SHIELD,LIGHT: f/flourescent fixture;styrene;Sig dwg SM-C-349983G			8		
5410-805-5533		SLING,MULTIPLE LEG: f/shelter lifting and tie down; Sig dwg SC-D-36423			1	27	
5410-792-6336		STRAP ASSEMBLY,TIE DOWN: 73"lg; Craig p/n P/N-705			6	2	7

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
		AN/MGC-19 (continued)					
5930-086-6924		SWITCH BOX: 2w-4w; 4"w x 3-3/4" d x 2-3/8"h; Sig dwg SM-D-353294			1	24	
		RUNNING SPARE ITEMS					
		TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19					
		SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19					
5920-281-0205		FUSE,CARTRIDGE: 1/4 amp, 250v; MIL type FO2GR125A			8	10	
5920-280-4465		FUSE,CARTRIDGE: 1 amp, 250v, Littlefuse p/n 312001			5	10	
5120-793-2027		HANDLE,HAMMER: hickory; 30 in lg; Woodings-Verona Tool Works p/n AW-30			1	11	6
6240-538-8447		LAMP,FLOURESCENT: 20w; 24 in lg; Sylvania p/n F20T12/SW			2	5	1
6240-179-1814		LAMP,GLOW: MIL type NE-45			5	5	2
6240-299-5876		LAMP,GLOW: MIL type NE-34			1	5	3
6240-155-7786		LAMP,INCANDESCENT: f/lantern; 2/4v; GE p/n PR-2; (mtd behind reflector in lantern)			1	11	13
6240-143-3070		LAMP,INCANDESCENT: 50w; GE p/n 50A/RS			1	5	4
6250-299-2884		STARTER,FLOURESCENT LAMP: Bryant Elec p/n FS-2			6	5	5

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

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NG: State AG (3); units—same as Active Army except allowance is one copy to each unit.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

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TECHNICAL MANUAL
NO. 11-5895-222-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *17 February 1961*

TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19

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CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual describes Teletypewriter Operations Central AN/MGC-19 (fig. 6 and 7) and covers its installation, operation, theory, and maintenance. It also includes instructions for installing components not provided as part of Shelter, Electrical Equipment S-182/MGC-19 (fig. 14, 15, and 16). Except for the shelter and its components, major components (para 5) are covered in detail in their respective technical manuals (appx I).

b. Official nomenclature followed by (*) is used to indicate all models of the equipment item covered in this manual. Thus, Teletypewriter Reperforator-Transmitter TT-76(*)/GGC represents Teletypewriter Reperforator-Transmitter TT-76/GGC, TT-76A/GGC, and TT-76B/GGC; Teletypewriter TT-4(*)/TG represents Teletypewriters TT-4A/TH and TT-4B/TG; and Rectifier RA-87(*) represents Rectifiers RA-87 and RA-87A.

2. Forms and Records

a. Unsatisfactory Equipment Reports. Fill out and forward DA Form 468 (Unsatisfactory Equipment Report), or DD Form 787-1 (Electronic Failure Report (Signal Equipment)) to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-ML, Fort Monmouth, N. J., as prescribed in AR 700-38 (for DA Form 468) or in AR 700-39 (for DD Form 787-1).

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58.

c. Preventive Maintenance Forms. Prepare preventive maintenance forms for the major components as specified in their respective technical manuals (appx I).

d. Parts List Form. Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8, or 9) direct to Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-ML, Fort Monmouth, N. J., with comments on appendix II.

e. Comments on Manual. Forward all other comments concerning this manual directly to the U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2d, Fort Monmouth, N. J.

Section II. DESCRIPTION AND DATA

3. Purpose and Use
(fig. 1)

Teletypewriter Operations Central AN/MGC-19 is an air- or vehicular-transportable assemblage of teletypewriter equipments. It includes facilities which may be used to obtain 7 voice frequency (vf) (A, fig. 1) or direct-current (dc) (B, fig. 1) teletypewriter circuits or 14 dc (C, fig. 1) full duplex teletypewriter circuits or 14 dc half duplex (C, fig. 1) teletypewriter circuits. Facilities are also included for local area telephone and intercommunication system communications. Alternating current (ac) power is provided by Trailer-Mounted Gasoline Engine Generator Set PU-294/U (two Gasoline Engine Generator Sets PU-286/U). The set is used in signal centers of an area-type communications system.

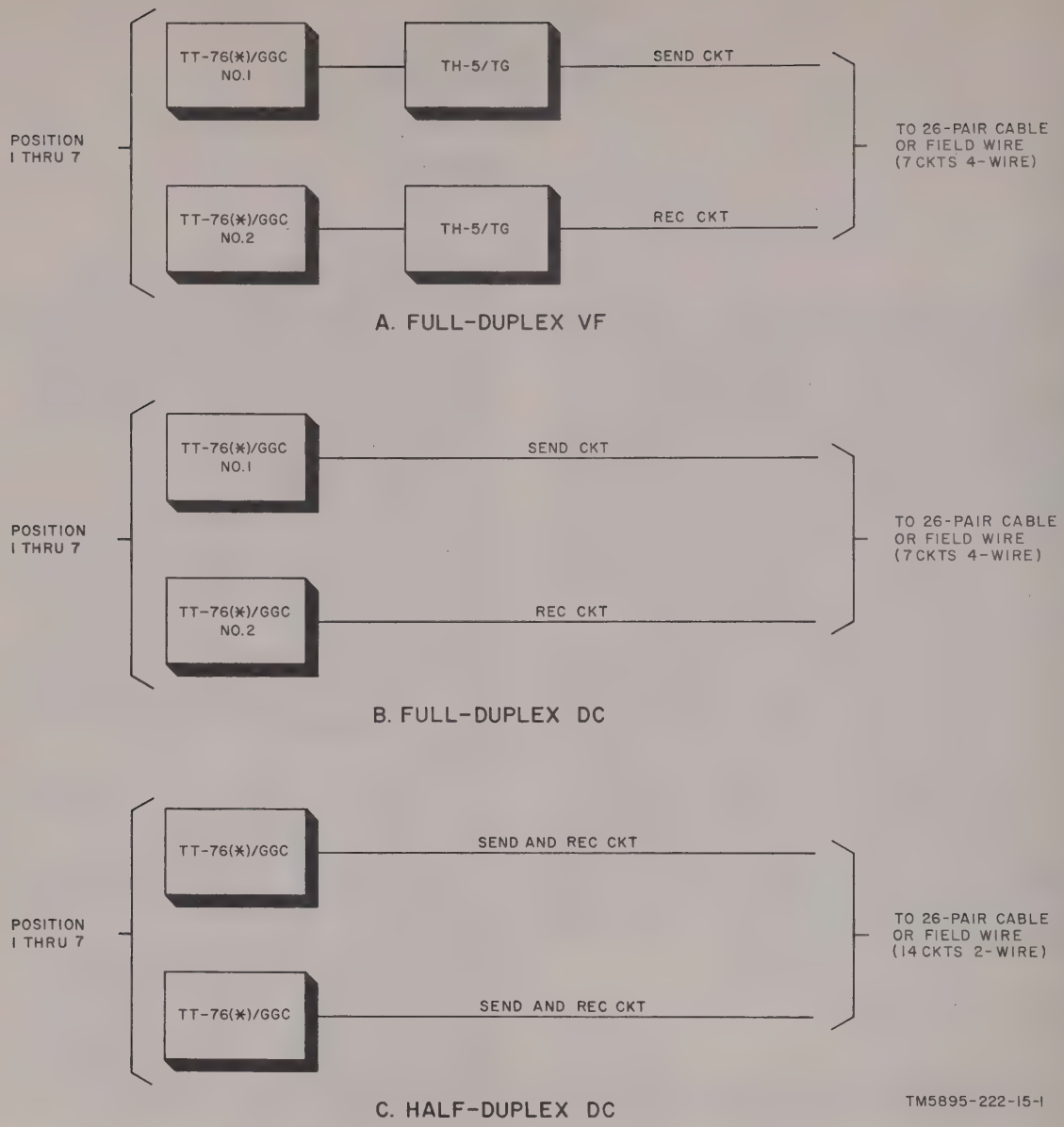


Figure 1. Teletypewriter Operations Central AN/MGC–19, typical equipment arrangement, block diagram.

4. Technical Characteristics

Power requirements	115 v, 60 cps, single phase, 3-wire.
Power consumption (maximum):	
Lights	160 watts.
Exhaust blowers	300 watts.
Electric heaters	3,000 watts.
Equipment:	
14 Teletypewriters Reperforator-Transmitter TT-76(*)/GGC	2,100 watts.

Teletypewriter TT-4(*)/TG	160 watts.
8 Terminals, Telegraph TH-5/TG	480 watts.
Intercommunication Station LS-147C/FI	32 watts.
Vacuum cleaner	60 watts.
Total	8,032 watts.
Teletypewriter communication facilities:	
Dc or vf, full-duplex operation	7 circuits.
Dc half-duplex operation	14 circuits.
Local communication facilities:	
Telephone circuit (TA-312/PT)	1 circuit.
Intercommunication circuit (LS-147C/FI)	1 circuit.
Weight:	
AN/MGC-19 (less PU-294/G)	3,810 lb.
PU-294/G	5,000 lb.
S-182/MGC-19	1,200 lb.
Outside dimensions of shelter:	
Length	138 in.
Width	80 in.
Height	77-1/2 in.

5. Major Components of Teletypewriter Operations Central AN/MGC–19

Quantity (ea)	Item	Figure
2	Rectifier RA-87(*)	9
1	Shelter, Electrical Equipment S-182/MGC-19 (para 6)	
1	Telephone Set TA-312/PT	9
1	Teletypewriter TT-4(*)/TG	9
14	Teletypewriter Reperforator-Transmitter TT-76(*)/GGC	8,9
1	Terminal Box TA-125/GT (stored under position No. 3)	9
8	Terminal, Telegraph TH-5/TG	8,9
1	Trailer-Mounted Gasoline Engine Generator Set PU-294/G including: 3 filler tubes 10 gasoline cans 2 Gasoline Engine Generator Sets PU-286/G 1 Trailer, Cargo, 1-1/2 ton, 2-wheel M-105A1	

6. Components of Shelter, Electrical Equipment S–182/MGC–19

Quantity (ea)	Item	Figure	Location
1	Axe	11	
1	Blackout curtain assembly	11	
12	Cable grip, power	2	Cabinet drawer No. 11
13	Cable grip, signal	2	Cabinet drawer No. 11
1	Cable assembly, power (100-ft), with reel	4,12	
1	Cable Assembly, Telephone CX-4566/G (250 ft) with Reel RC-435/U.	4,12	

Quantity (ea)	Item	Figure	Location
2	Cable stub, power (15-ft)	2	Cabinet drawer No. 2
1	Cable Assembly, Telephone CX-476O/U (15-ft)	2	Cabinet drawer No. 2
1	Clock, 3 in.	10	
1	Cushion, seat	7	
1	Drain plug wrench	11	
1	Droplight (25-ft)	2	Cabinet drawer No. 12
1	Distribution Box J-1077A/U	8	Under position No. 6
2	Electric heater	9,18	
2	Exhaust fan	16	
1	Fire extinguisher, 2-1/2 lb	10	
1	Fire extinguisher, 5 lb	11	
1	First aid kit	11	
8	Fluorescent lamp 20 w (24 in.)	13	
8	Fluorescent lamp starter FS-2	13	
2	Folding chair	10	
2	Grease pencil	10	
2	Ground rod	11	
2	Ground strap	2	Cabinet drawer No. 2
1	Hand brush	11	
5	Hardware bag	2	
1	Intercommunication Station LS-147C/FI	19	
1	Ladder assembly	12	
1	Hand lantern	11,29	
1	Line cord with duplex receptacle (15-ft)	2	Cabinet drawer No. 12
15	Patch cord, black (1-1/2-ft)	3	Cabinet drawer No. 6
14	Patch cord, red 1-1/2-ft)	3	Cabinet drawer No. 6
7	Patch cord, black (4-ft)	3	Cabinet drawer No. 6
7	Patch cord, red (4-ft)	3	Cabinet drawer No. 6
1	Pencil sharpener	11	
1	Shelter, Electrical Equipment S-141/G (modified)	14	
1	Sledge hammer	11	
1	Switch, 2W-4W	22	
1	Sledge handle, spare	11	
1	Sling assembly	12,26	
7	Tape basket	8,9	
2	Telephone cord (4-ft)	2	
6	Tiedown strap, floor	2	Cabinet drawer No. 11
1	Tiedown bar	4	
1	Tool roll kit including: 1 bag with 10 pockets 1 adjustable wrench, 8 in. 1 Allen wrench set 1 Knife TL-29 1 lineman's pliers 1 long-nose pliers 1 screwdriver, 2 in. 1 screwdriver, 4 in. 1 screwdriver, 6 in. 1 socket wrench set 1 vise-grip pliers, 7-in.	2	Cabinet drawer No. 4
1	Tube pin straightener	11	
1	Tube puller, 7 pin	11	
1	Tube puller, 9 pin	11	

Quantity (ea)	Item	Figure	Location
1	Vacuum cleaner		Cabinet drawer No. 13
8	Wastebasket	9	
1 set	Technical manuals for major components (para 5)		Cabinet drawer No. 7
1 set	Running spares including:		
	2 fluorescent lamps, 20 w (24 in.)	5,13	Ceiling
	6 fluorescent lamp starters FS-2	5,13	Ceiling
	5 glowlamps NE-45	5	Cabinet drawer No. 8
	1 incandescent lamp 50 w	5	Cabinet drawer No. 8
	1 power indicator neon lamp NE-34	5	Cabinet drawer No. 8

7. Common Names

Components of Teletypewriter Operations Central AN/MGC-19 to which common names have been assigned are listed below.

Item	Common name
Shelter, Electrical Equipment S-182/MGC-19.	Shelter
Cable Assembly, Telephone CX-4566/G (250 ft).	26-pair cable
Connector, Receptacle, Electrical U-187A/G.	26-pair receptacle
Connector, Plug, Electrical U-185B/G.	26-pair connector

8. Description of Teletypewriter Operations Central AN/MGC-19

Components of the AN/MGC-19 (para 5 and 6) except the PU-294/G are housed in Shelter, Electrical Equipment S-182/MGC-19 (fig. 14). Major components are described in paragraph 9; shelter components are described in paragraph 10. The signal and power entrance boxes are provided with receptacles and binding posts (fig. 17 and 18) for making external cable and field wire connectings. Figures 6 and 7 are interior views of the AN/MGC-19; the locations of interior components are shown in figures 8 through 13.

9. Description of major Components of AN/MGC-19

a. Shelter, Electrical Equipment S-182/MGC-19. The shelter (fig. 14) is a component of the AN/MGC-19 in which the components (para 5 and 6), except the PU-294/G, are installed (fig. 15 and 16). The shelter can be transported by helicopter or truck and is fully insulated, watertight, and airtight. Two exhaust blower vents (not shown) with hinged covers and rain shields are located on the outside front wall. A two-section door, at the rear, permits entrance to the shelter. The top section of the door is used while the shelter is truck mounted and the truck tailgate is up.

(1) *Lighting.* Eight 20-watt fluorescent lamps, arranged in two rows on the ceiling, provide lighting for the shelter. Two spare fluorescent lamps and six spare starters are clip mounted on the ceiling (fig. 13). A POWER INDICATOR NEON LAMP (fig. 11) lights to show that ac power is connected to the shelter.

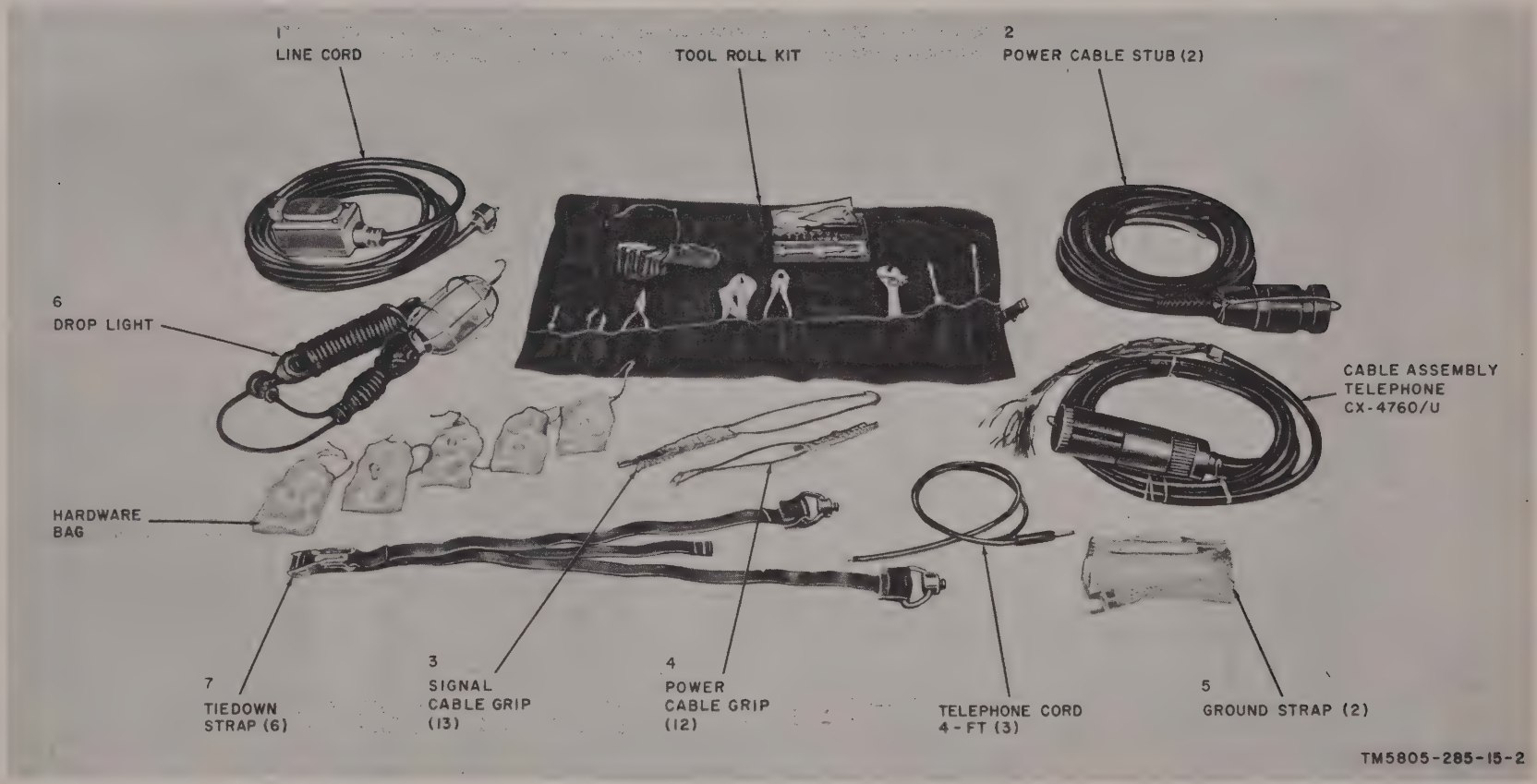


Figure 2. Shelter, Electrical Equipment S–182/MGC–19, tools and accessories.

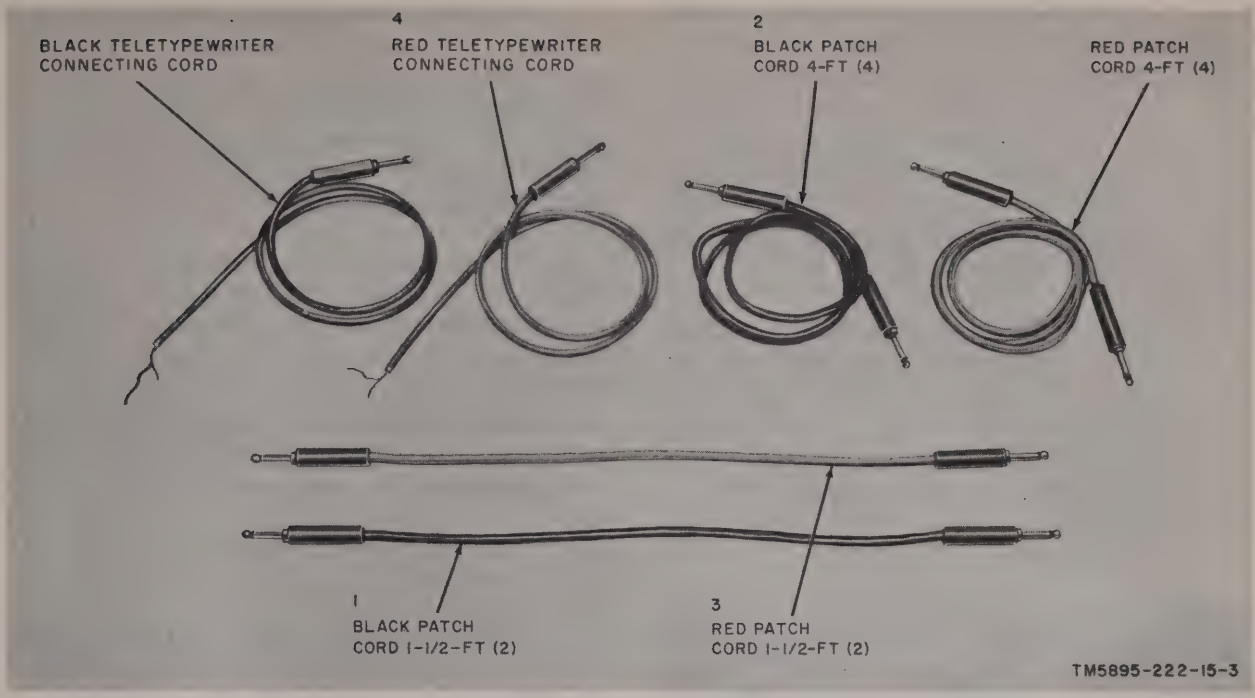


Figure 3. Shelter, Electrical Equipment S-182/MGC-19, connecting and patch cords.

(2) *Power and signal wiring*. Power wiring (fig. 39) and signal wiring (fig. 40) within the shelter are distributed separately in metal ducts that are equipped with removable covers. Within the shelter, ac power is routed through circuit-breaker switches in the power distribution panel to the individual circuits. Convenience and equipment ac power receptacles are provided in the power duct.

(3) *Power and signal entrance box* (fig. 17). The power and signal entrance box is located in the exterior rear wall (fig. 14). It contains receptacles to connect power cables, a 26-pair cable, and binding posts to terminate circuits to Telephone Set TA-312/PT and Intercommunication Station LS-147C/FI. The 26-pair cable receptacle is connected in parallel with the binding post in the signal entrance box ((4) below). The power and signal entrance box cover is equipped with folding side panels for weather protection and is secured with captive-screw type fasteners.

(4) *Binding post signal entrance box* (fig. 18). The binding post signal entrance box is mounted on the exterior rear wall (fig. 14) and contains 24 pairs of binding posts. Pairs 1 through 24 of SIGNAL 1 are connected in parallel with the pins of the 26-pair cable receptacle in the power and signal entrance box, and may be used in place of 26-pair receptacles for field wire line connections to the AN/MGC-19. Pairs 25 and 26 are wired to the PHONE and INTERCOM jacks in the jack panel at position No. 1 (fig. 9). The binding post signal entrance box cover is equipped with folding side panels for weather protection and is secured with captive-screw type fasteners.

(5) *Power distribution panel* (fig. 19). The power distribution panel is mounted on the rear wall (fig. 11).

It contains a voltmeter, a current transformer (not shown), an ammeter, a frequency meter, a MAIN circuit breaker, and nine individual circuit breakers switches. A glow-lamp is associated with each power distribution panel circuit breaker switch and lights when the switch is in the ON position.

(6) *Signal entrance panel.* The signal entrance panel is mounted on the rear wall (fig. 11) and provides access to the rear of the binding posts in the signal entrance box (*e* above). It is equipped with a removable cover secured with captive screws.

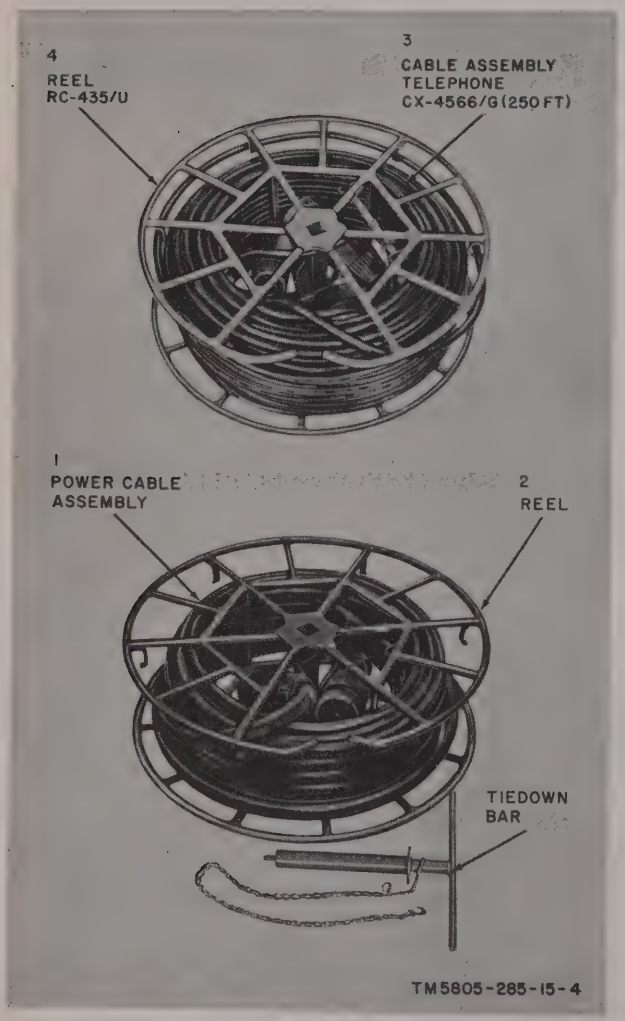


Figure 4. Shelter, Electrical Equipment S-182/MGC-19, cable assemblies and reels.

b. Rectifier RA-87(*). Two RA-87(*)'s (TM 11-957) are located beneath the roadside tabletop at position No. 4 (fig. 9). The RA-87(*) rectifies 115 volts ac to 115 volts dc. It is used to supply dc line current to the TT-76(*)/GGC's and the TT-4(*)/TG when required.

c. Terminal, Telegraph TH-5/TG. Eight TH-5/TG's (TM 11-5805-246-10) are located on the curbside and roadside equipment shelves (fig. 8 and 9). The TH-5/TG is used with the TT-76(*)/GGC's and the TT-4(*)/TG to provide transmission over vf circuits. TH-5/TG No. 2 is connected to the patch panel through the 2W-4W switch (para 10). TH-5/TG No. 1 and 3 through 8 are connected directly to the patch panel.

d. Telephone Set TA-312/PT. The TA-312/PT (TM 11-2155) (less carrying case) is mounted on the tabletop (fig. 9). The TA-312/PT is arranged for local battery operation and is used for communication between shelters within a particular signal center.

e. Teletypewriter TT-4(*)/TG. The TT-4(*)/TG (TM 11-5815-206-12) is mounted on the roadside tabletop (fig. 9) and is used for monitoring teletypewriter circuits.

f. Teletypewriter Reperforator-Transmitter TT-76(*)/GGC. Two TT-76(*)/GGC's (TM 11-2225) are located at each of the seven operating positions (fig. 8 and 9) and are used for tape relay or manual keyboard operation in the AN/MGC-19.

g. Terminal Box TA-125/GT. The TA-125/GT (TM 11-2138) is stored under the roadside tabletop (fig. 9).

h. Trailer-Mounted Gasoline Engine Generator Set PU-294/G. The PU-294/G consists of two Gasoline Engine Generator Sets PU-286/G (TM 11-940A) mounted on a standard M-105A1 cargo trailer. It is equipped with ten 5-gallon gasoline cans, three filler tubes, grounding facilities and accessories. It supplies ac power for the AN/MGC-19.

10. Description of Shelter Components

a. Electric Heaters (fig. 20). The electric heaters are secured in their mounting bases on the floor of the shelter (fig. 9). Each heater contains a 1.5-kilowatt heating element and a fan for air circulation. The fan operates when the heating element is turned on, but may also be operated independently. Horizontal louvers on the front of each heater are adjustable to deflect the airstream. Operating controls are located on top of each heater; the power cord extends through a hole in the right side of the back cover plate.

b. Intercommunication Station LS-147C/FI (fig. 21). The LS-147C/FI is mounted on the roadside tabletop at position No. 1 (fig. 9). It provides two-way, nonprivate communication in a system consisting of other LS-147/FI's or equivalent equipments. The signal circuit is extended to the INTERCOM jack on the nearby jack panel (fig. 9) through a cord and plug connected to the binding posts on the rear of the LS-147C/FI.

c. Exhaust Blowers. Two exhaust blowers mounted on the front wall (fig. 10) are equipped with removable covers that muffle the sound when the blowers are turned on. Lighttight vents, equipped with hinged covers and rain shield, provide exhaust access to the outside of the shelter.

d. Clock. An 8-day, luminous-dial, 24-hour clock is mounted on the front wall (fig. 10). A knob on the left-hand side is used for winding and setting the clock.

e. Patch Panel. The patch panel is part of the LINE CONTROL-MONITOR-PATCH PANEL (fig. 22) located on the roadside wall (fig. 9). It consists of five jack strips and provides monitoring and switching facilities for the teletypewriter circuits.

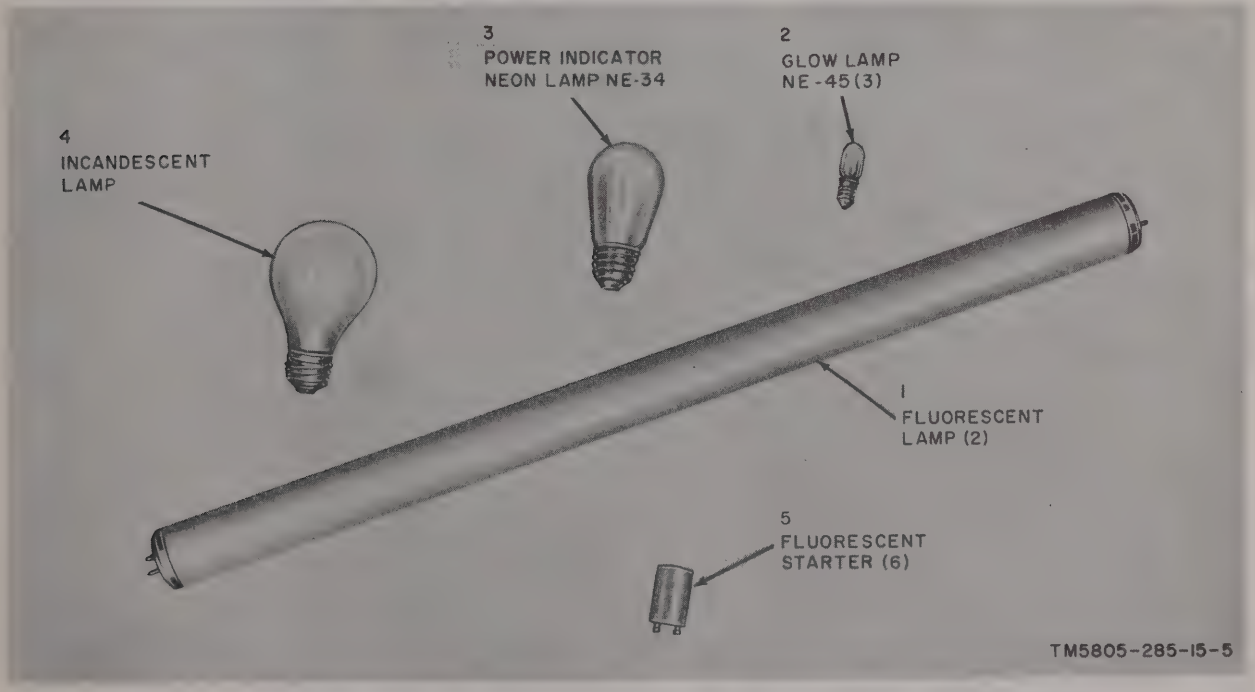


Figure 5. Shelter, Electrical Equipment S-182/MGC-19, running spares.

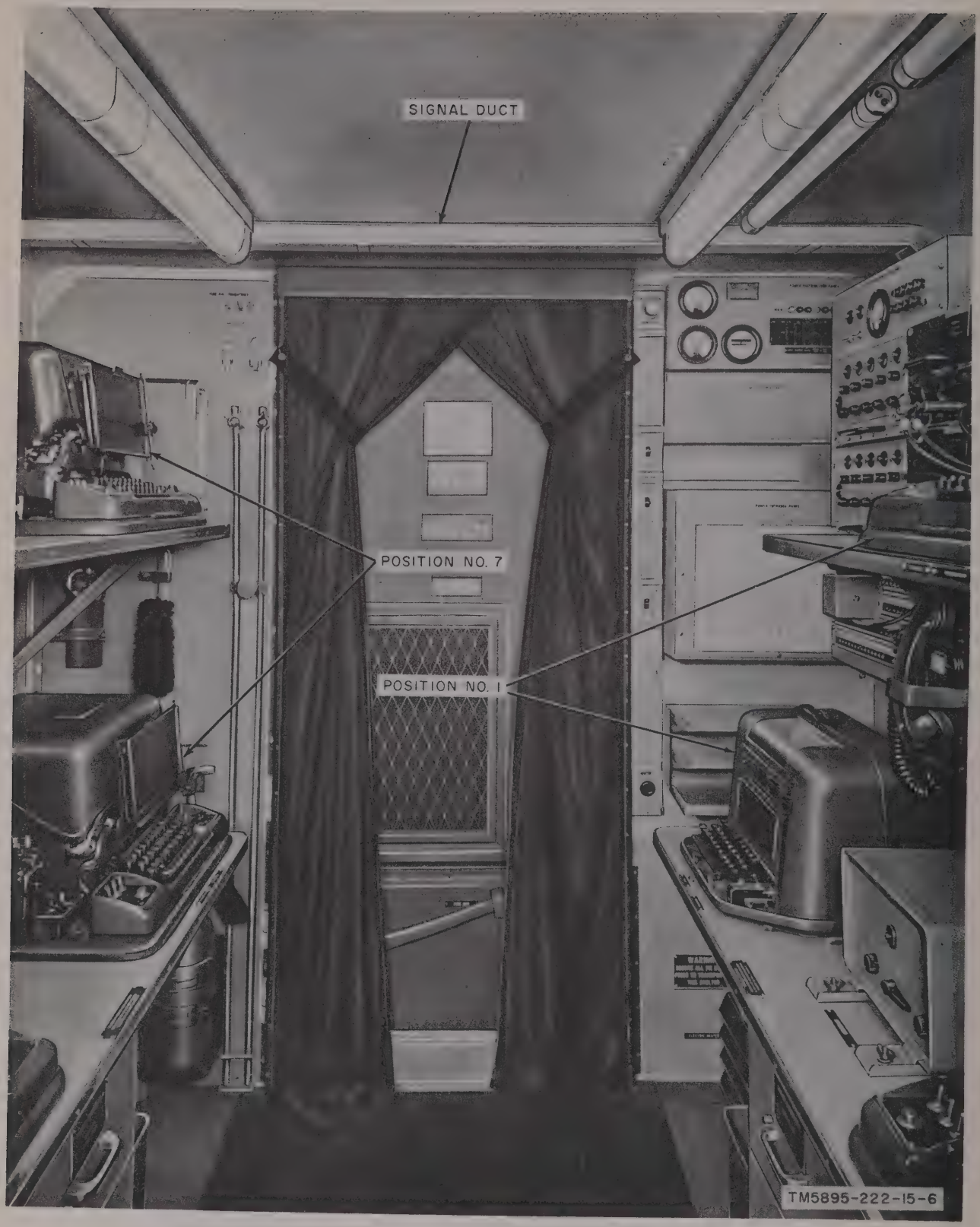


Figure 6. Teletypewriter Operations Central AN/MGC–19, interior rear view.

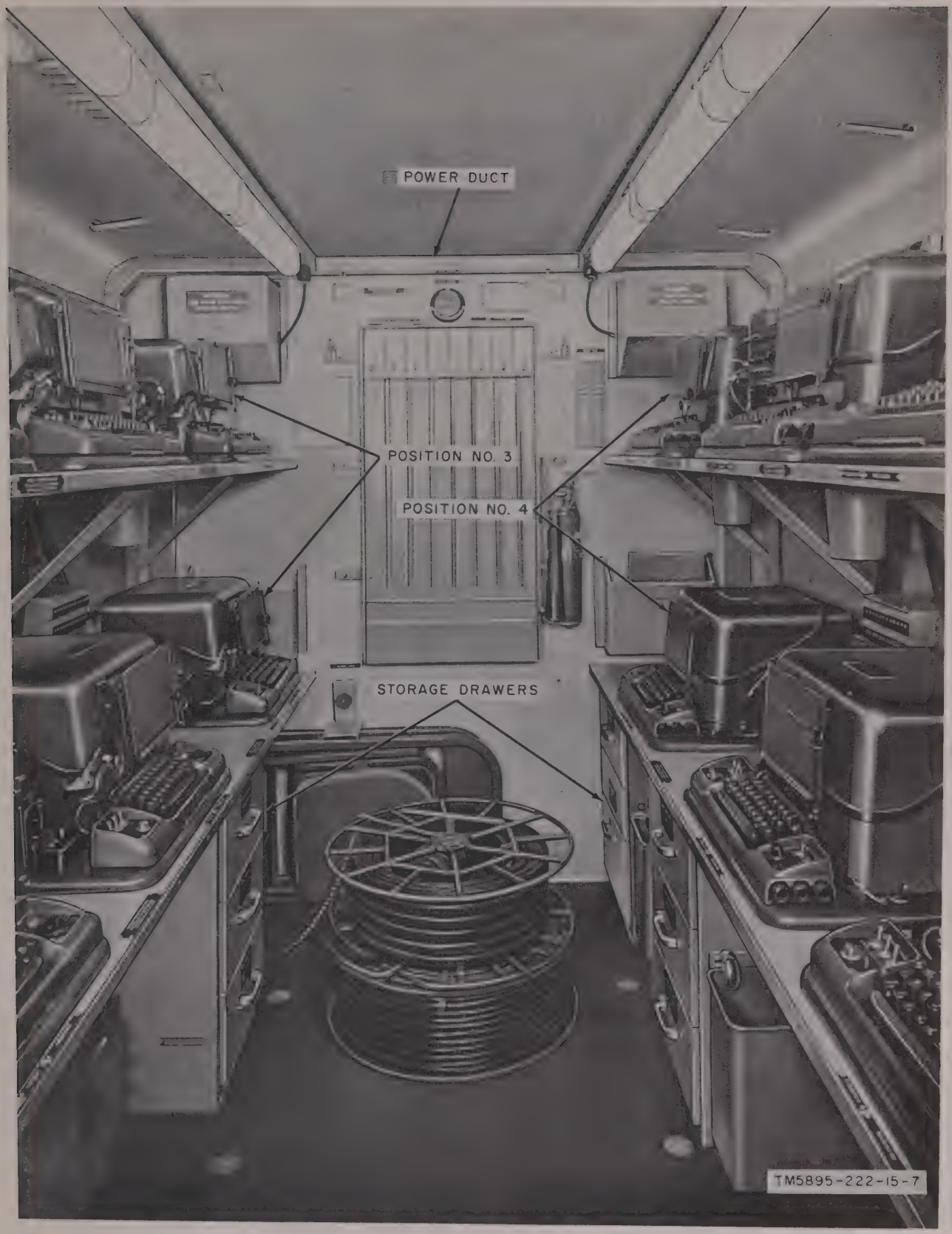


Figure 7. Teletypewriter Operations Central AN/MGC–19, interior front view.

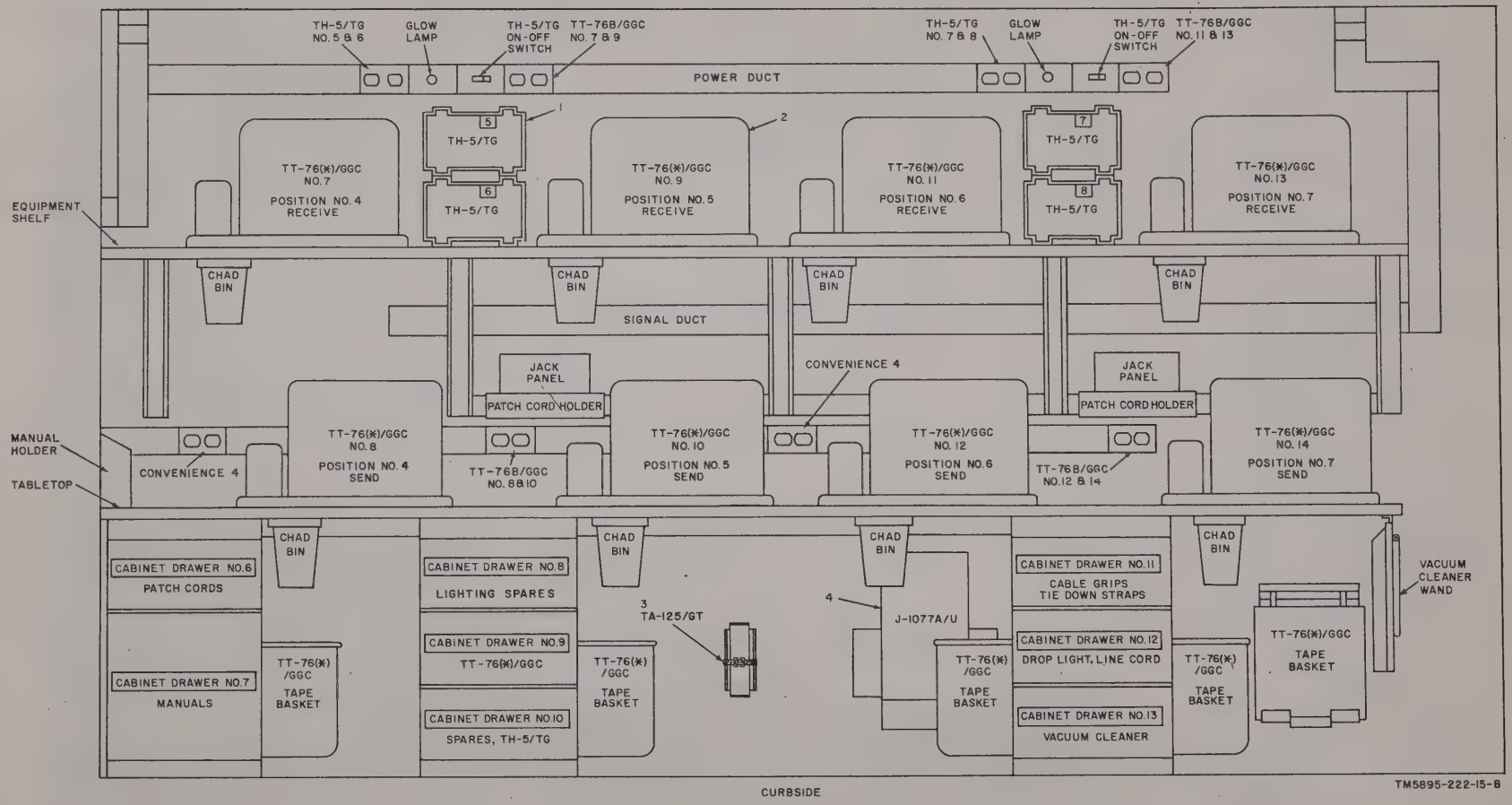


Figure 8. Teletype Operations Central AN/MGC–19, curbside wall, elevation diagram.

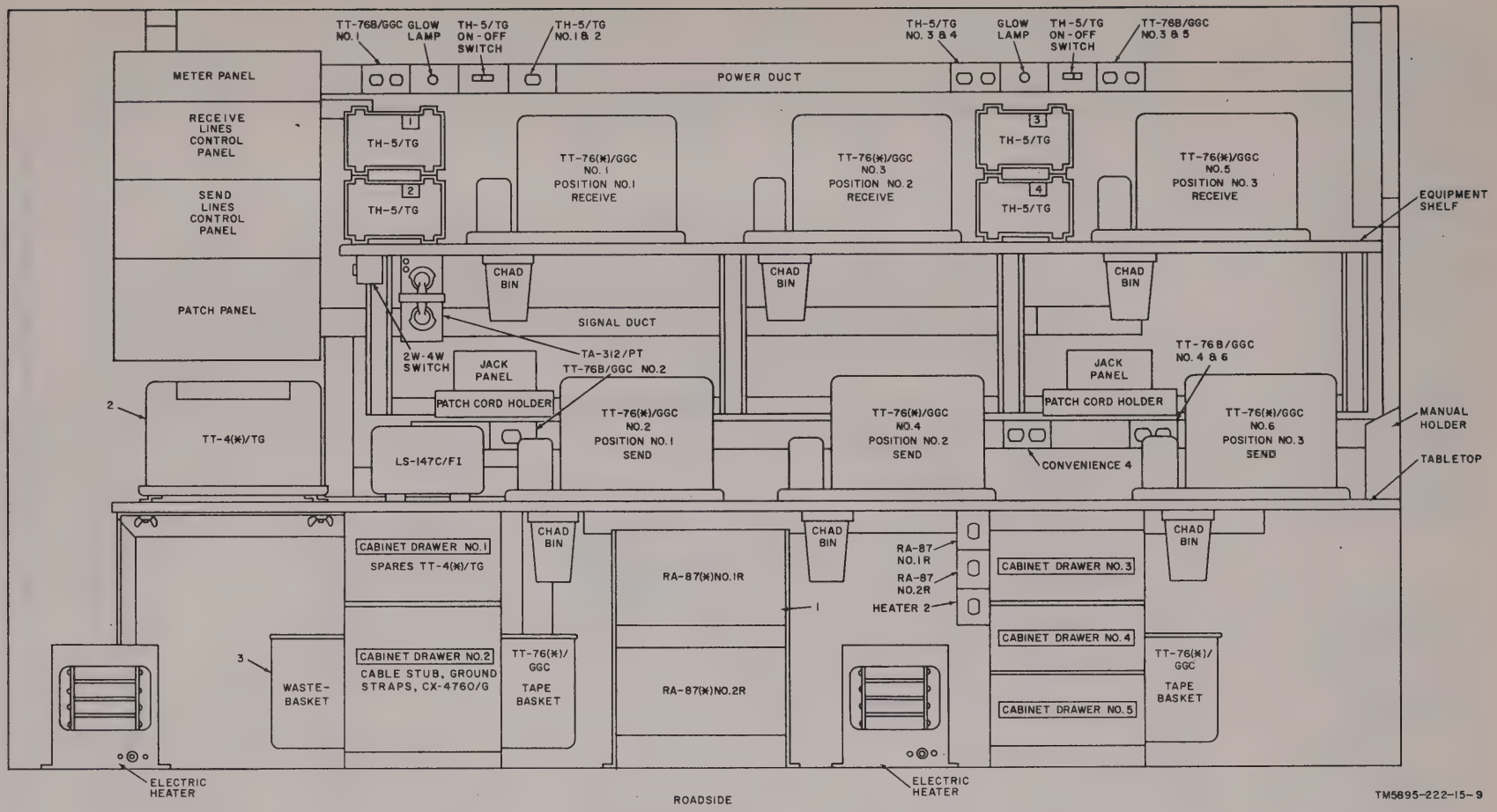


Figure 9. Teletypewriter Operations Central AN/MGC–19, roadside wall, elevation diagram.

f. Line Control Panels. The send and receive lines control panels are part of the LINE CONTROL-MONITOR-PATCH PANEL (fig. 22) located on the roadside wall (fig. 9). Each panel consists of 14 toggle switches, 7 line current adjust controls, 7 fuses and fuse alarm lamps (glowlamps), and a RECTIFIER 115V.D.C. OUTPUT glowlamp. The panels provide selection of vf or dc options and control of the dc line currents in the teletypewriter send and receive circuits.

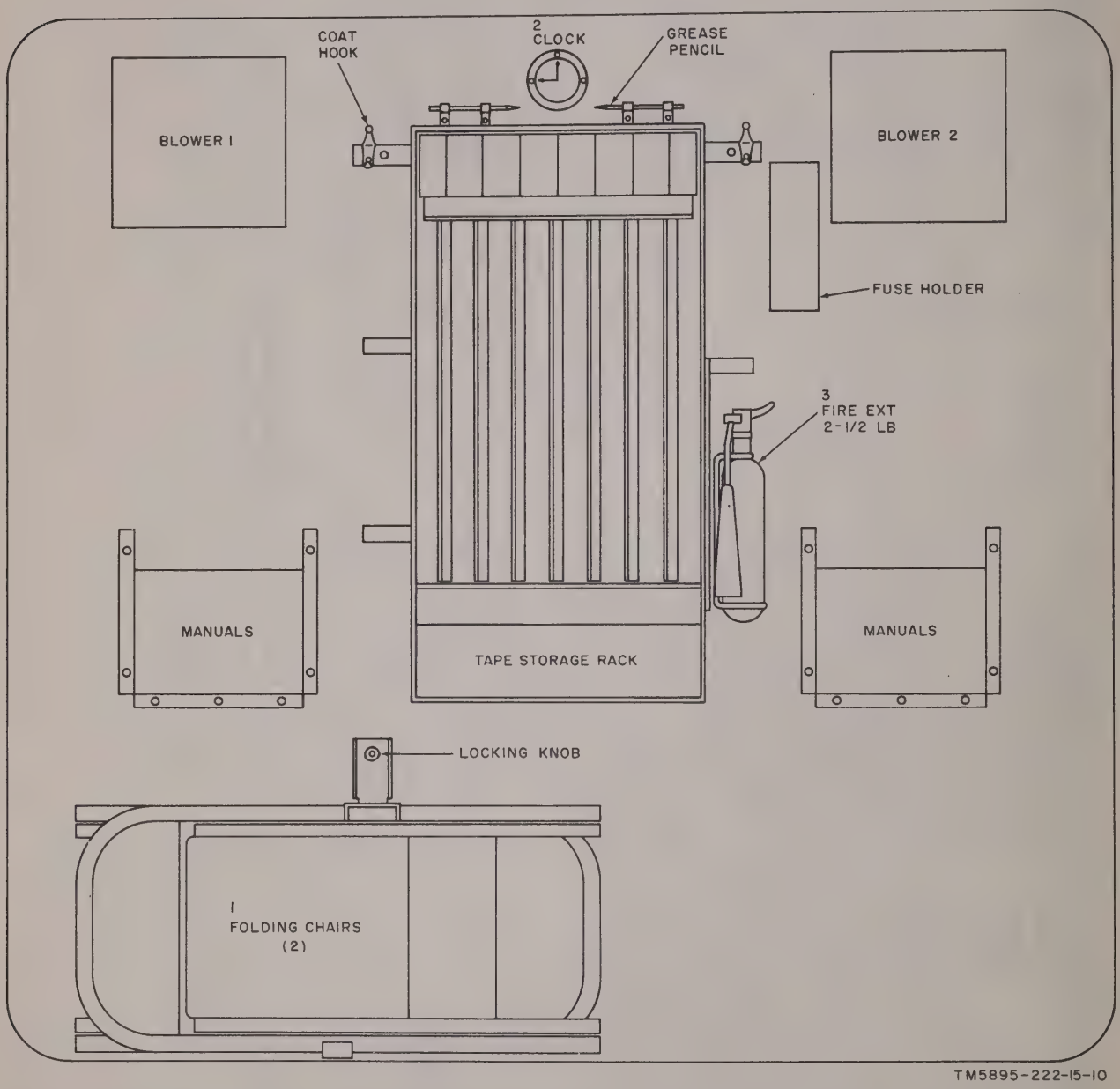


Figure 10. Teletypewriter Operations Central AN/MGC–19, front wall, elevation diagram.

g. Meter Panel. The meter panel is part of the LINE CONTROL-MONITOR-PATCH PANEL (fig. 22) located on the roadside wall (fig. 9). It consists of a dc milliammeter, two ON-OFF switches with associated glowlamps, and four pairs of binding posts connected to spare pairs 21 through 24 of the power and signal entrance box and the binding posts in the binding post signal entrance box, and also to the SPARES jacks in the patch panel.

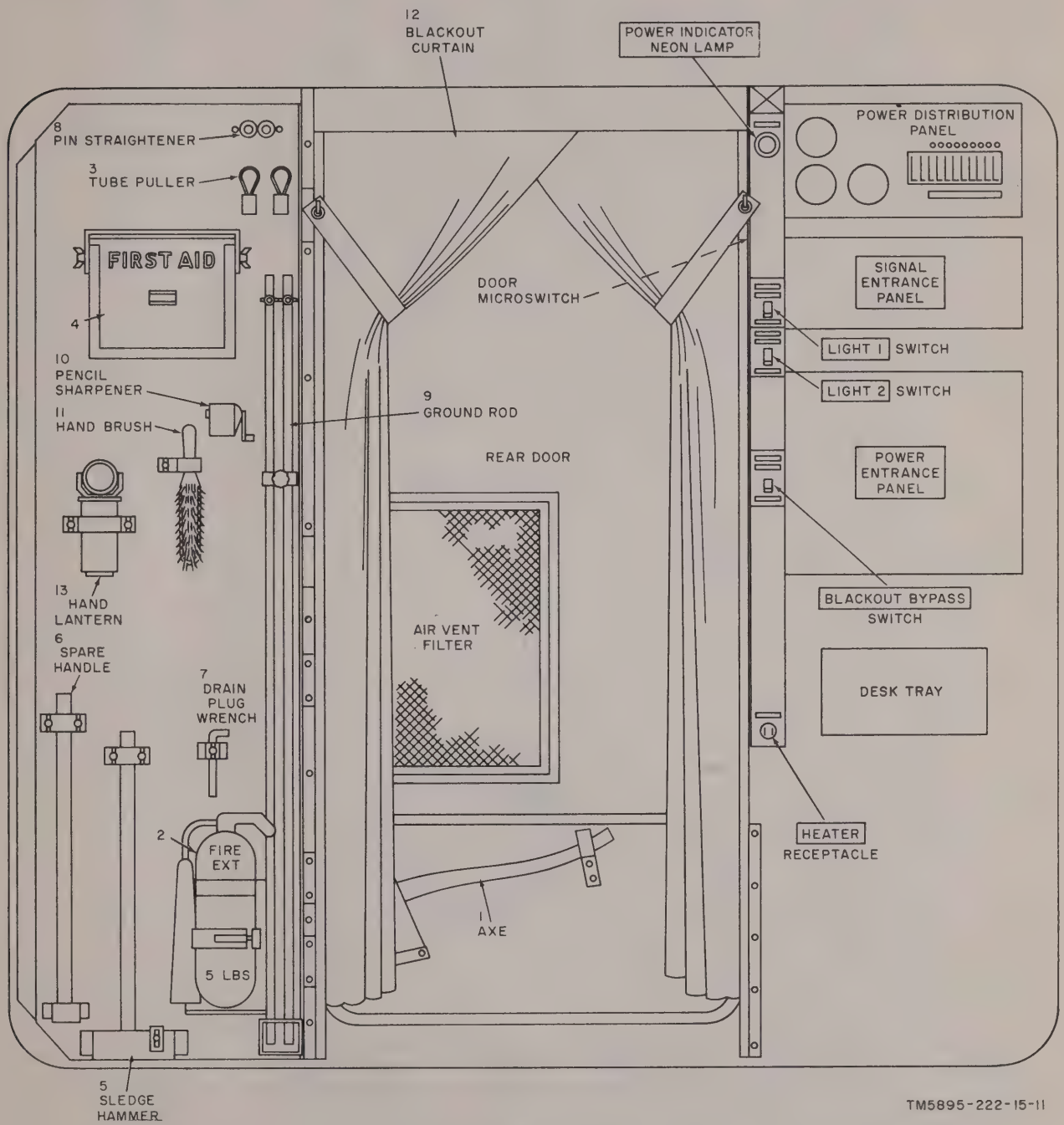


Figure 11. Teletypewriter Operations Central AN/MGC–19, rear wall, evelation diagram.

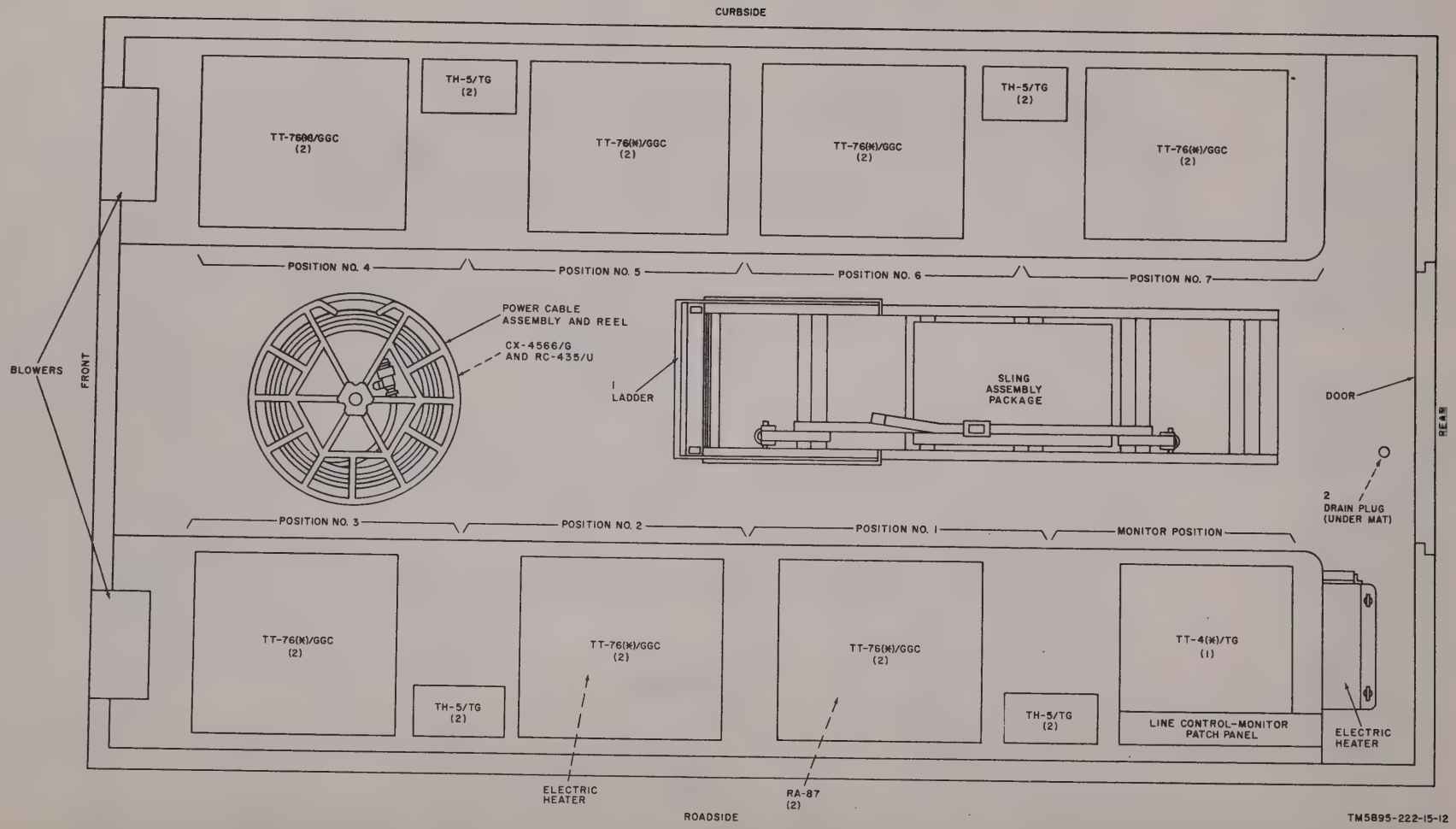


Figure 12. Teletypewriter Operations Central AN/MGC–19, floor plan.

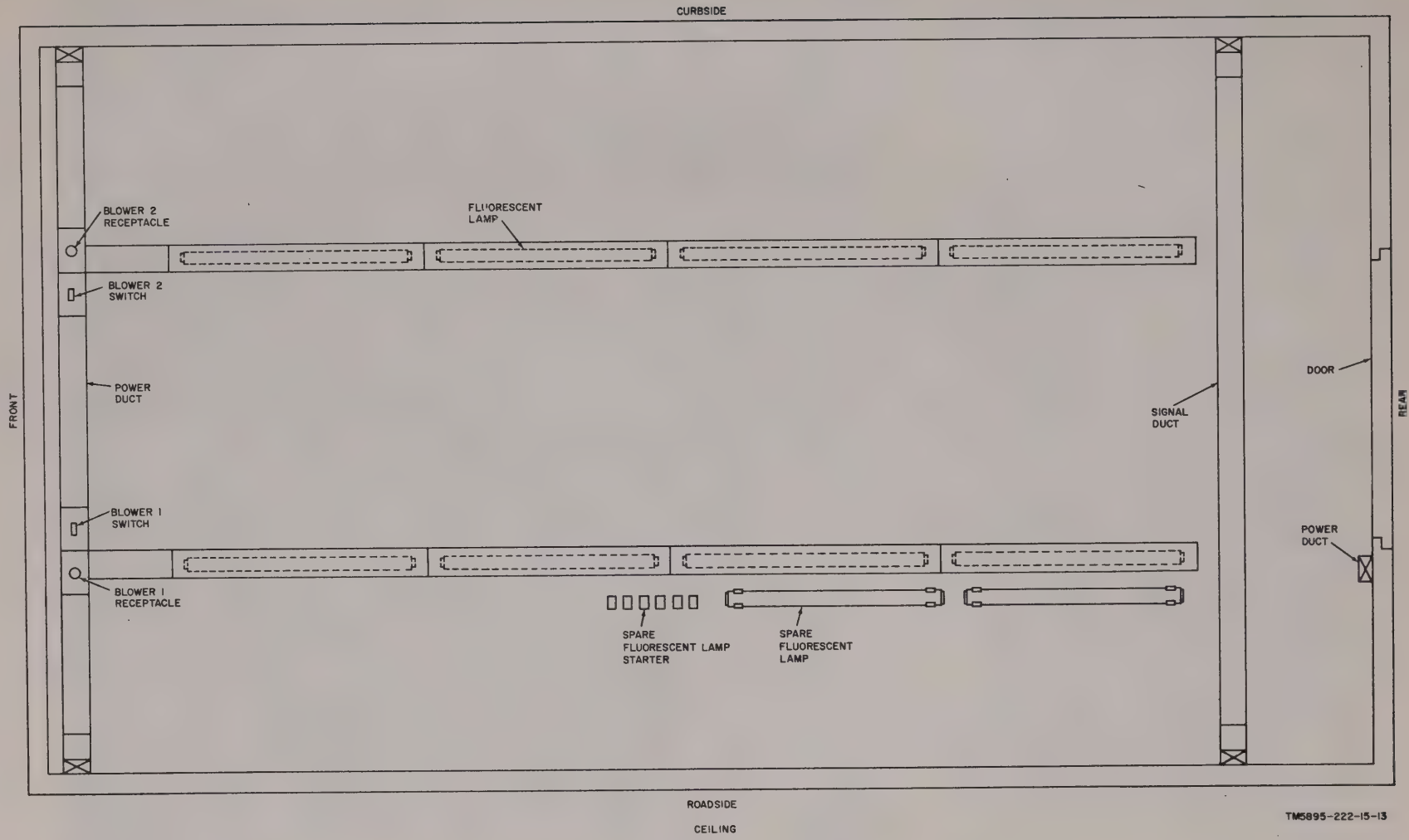


Figure 13. Teletypewriter Operations Central AN/MGC–19, ceiling plan.

(3) *Cable Assembly, Telephone CX-4566/G (250 ft)* (fig. 4). The 26-pair cable is wound on Reel RC-435/U and secured to the floor of the shelter with the power cable assembly and reel ((2) above) (fig. 7 and 12). It is 250 feet long and is equipped with a 26-pair cable connector on each end.

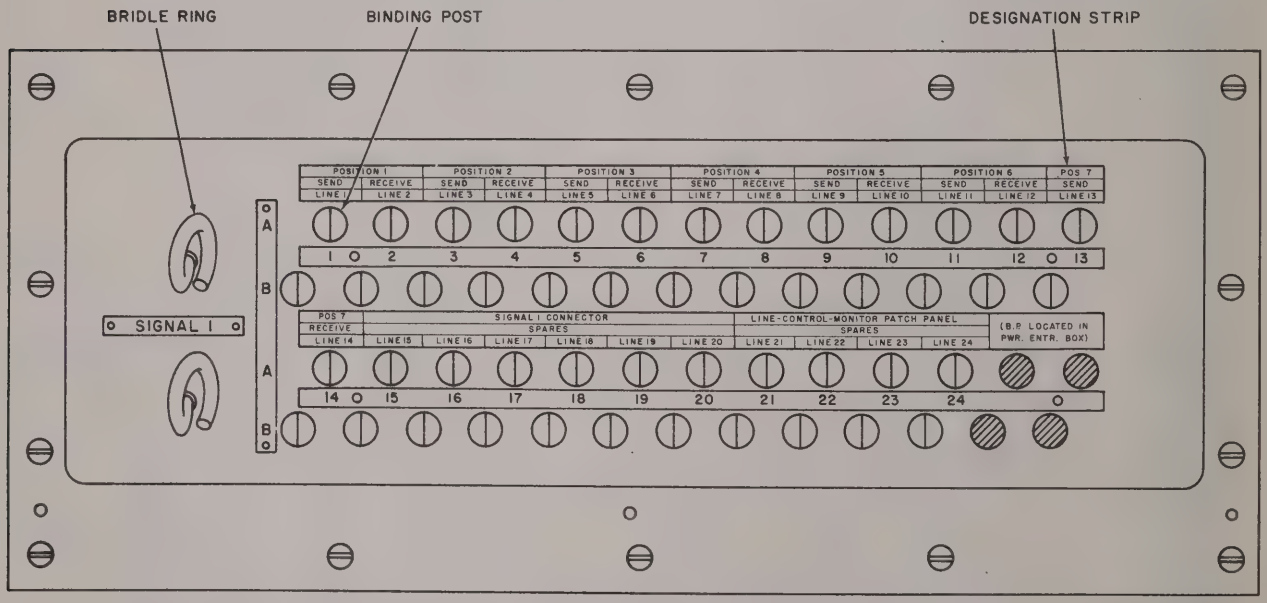
(4) *Patch cords* (fig. 3). The patch cords are stored in cabinet drawer No. 6 (fig. 8) and are supplied for use with the patch panel. They are two-conductor cords, equipped with telephone plugs at each end.

(5) *Telephone cords* (fig. 2). The telephone cords are two-conductor cords with a telephone plug on one end and prepared leads at the other. One cord is used to connect the TA-312/PT and another is used to connect the LS-147C/FI to its respective jacks at the position No. 1 jack panel (fig. 8).

(6) *Teletypewriter connecting cords* (fig. 3). The teletypewriter connecting cords are stored in cabinet drawer No. 1 (fig. 9). They are flexible, two-conductor cords with a telephone plug on one end and prepared leads on the other. They are installed on the TT-4(*)/TG and used to connect the TT-4(*)/TG to patch panel jacks or the TH-5/TG No. 2.

k. Distribution Box J-1077A/U. The J-1077A/U is mounted beneath the tabletop on the curbside wall (fig. 8). It is equipped with 26 pairs of binding posts connected in parallel with two 26-pair receptacles. The J-1077A/U can be used to connect field wires into a 26-pair cable.

l. 2W-4W Switch (fig. 24). The 2W-4W switch is mounted underneath the roadside shelf adjacent to the TT-4(*)/TG (fig. 9) and is equipped with cords to facilitate connection to the patch panel jacks. It is wired to the TH-5/TG No. 2 through four color-coded conductors and pair of shielded wires. The 2W-4W switch, in conjunction with the TH-5/TG 4W-2W-TEL switch, arranges the TH-5/TG for two-wire four-wire, half-duplex operation, or four-wire, full-duplex operation.



TM5895-222-15-16

Figure 18. Binding post signal entrance box, cover removed.

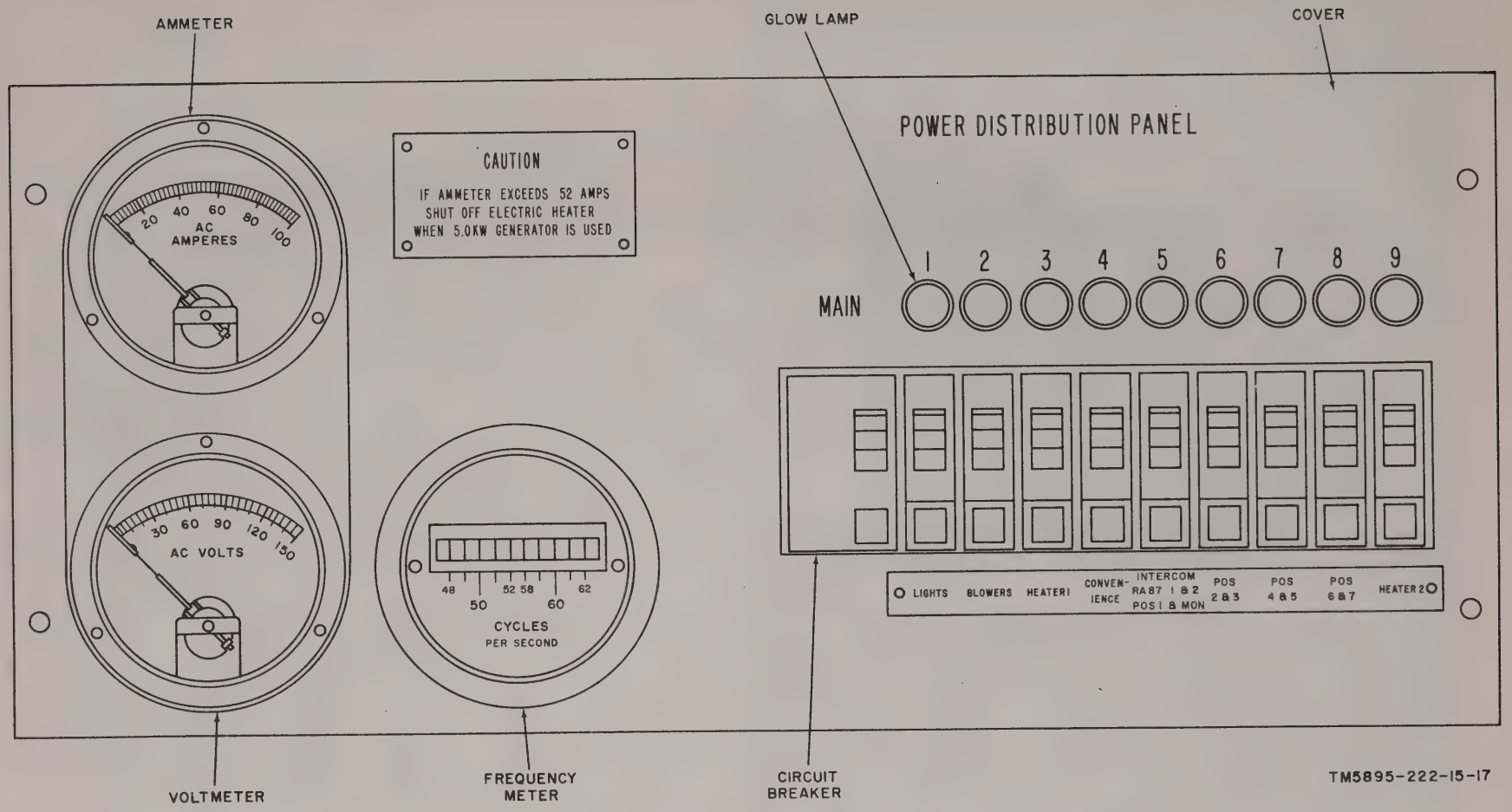


Figure 19. Power distribution panel, controls, meters, and indicators.

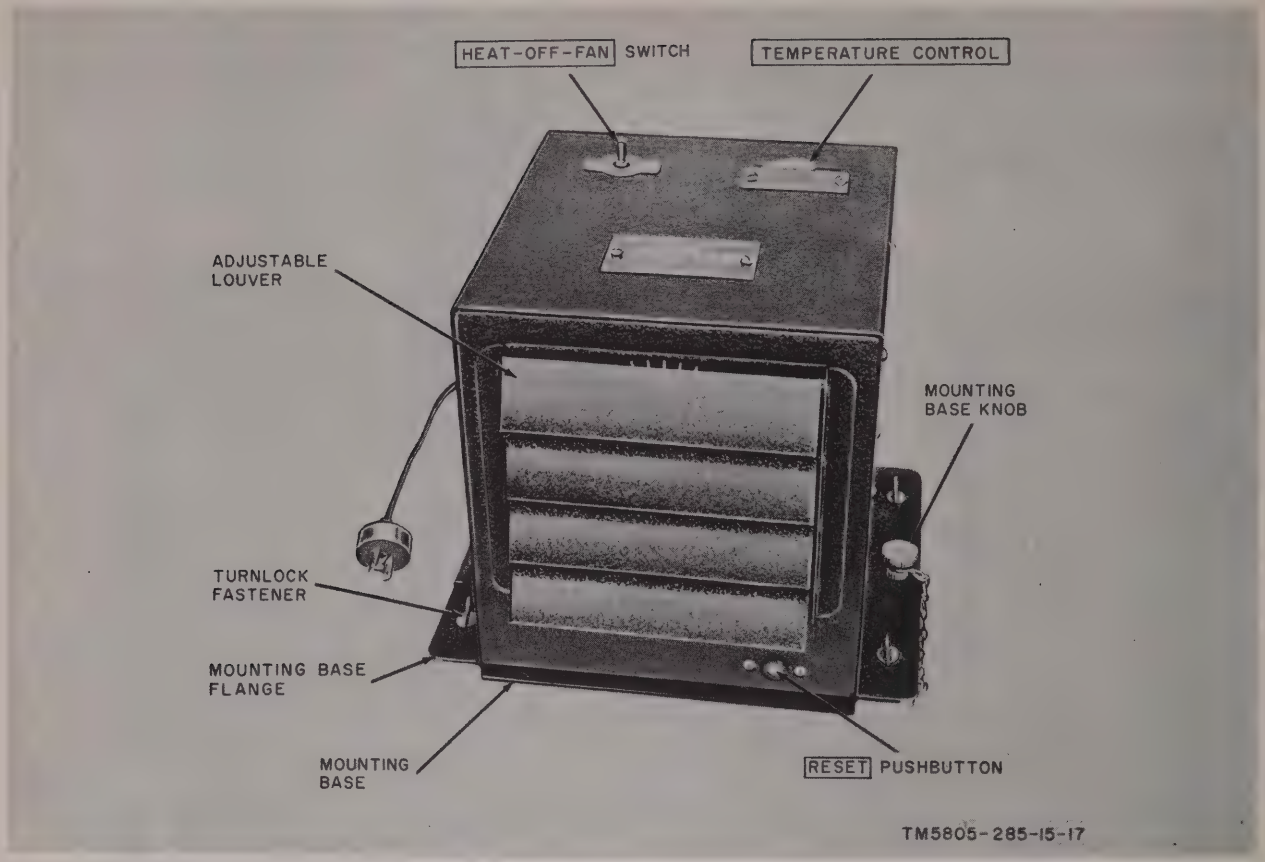


Figure 20. Electric heater.

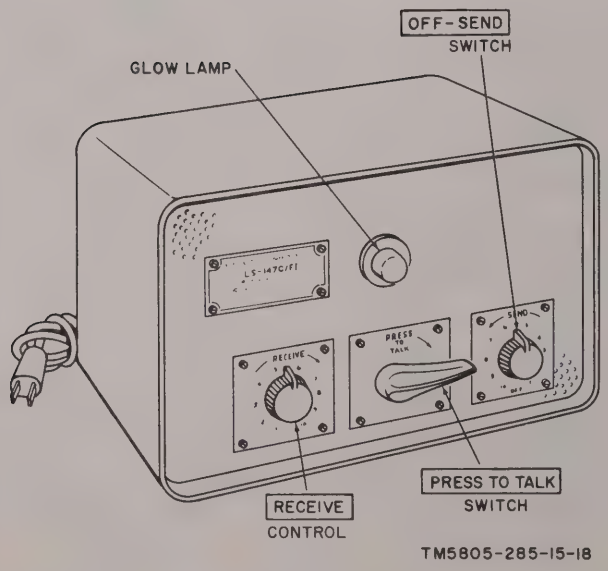


Figure 21. Intercommunication Station LS–147C/FI.

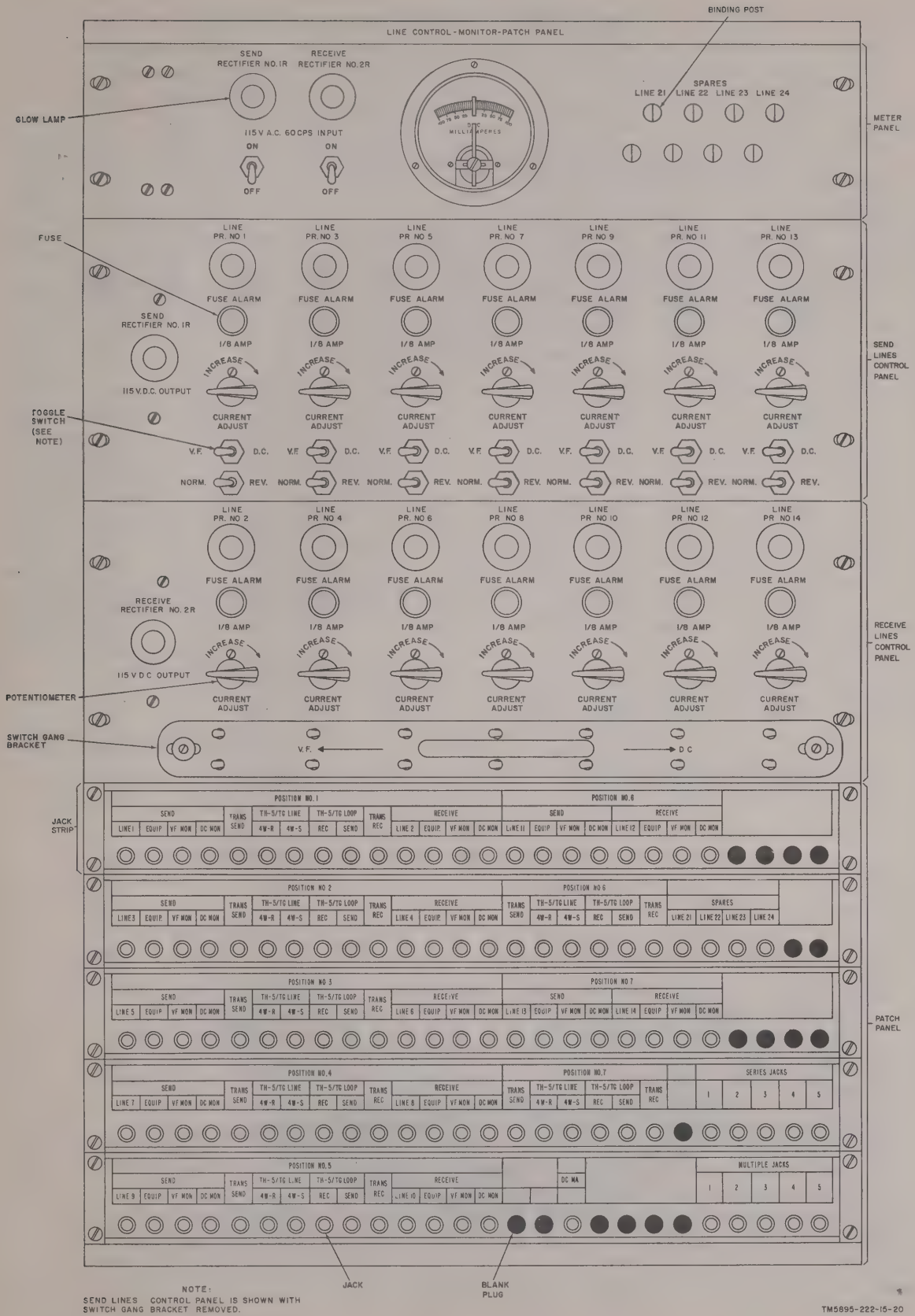
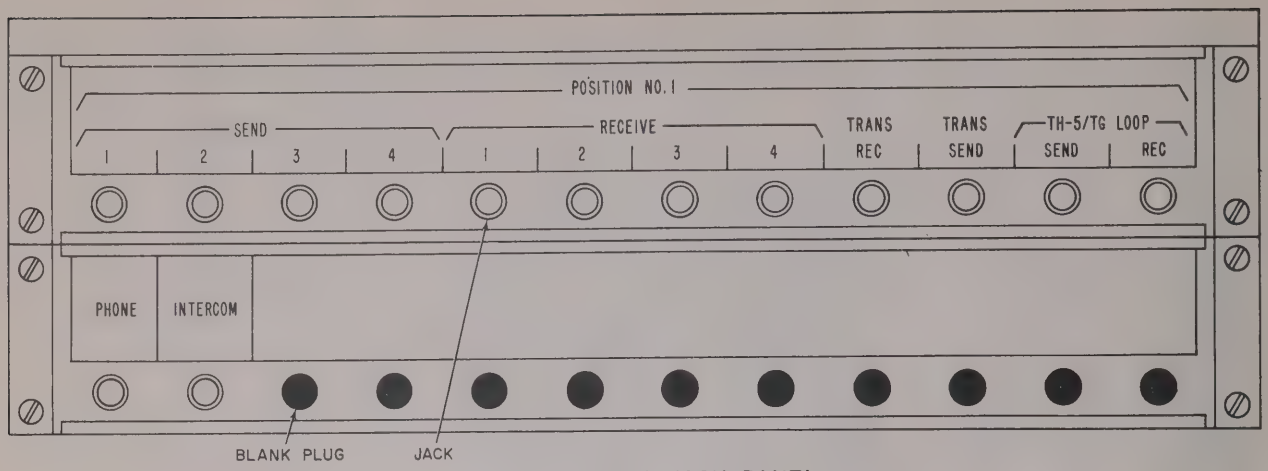
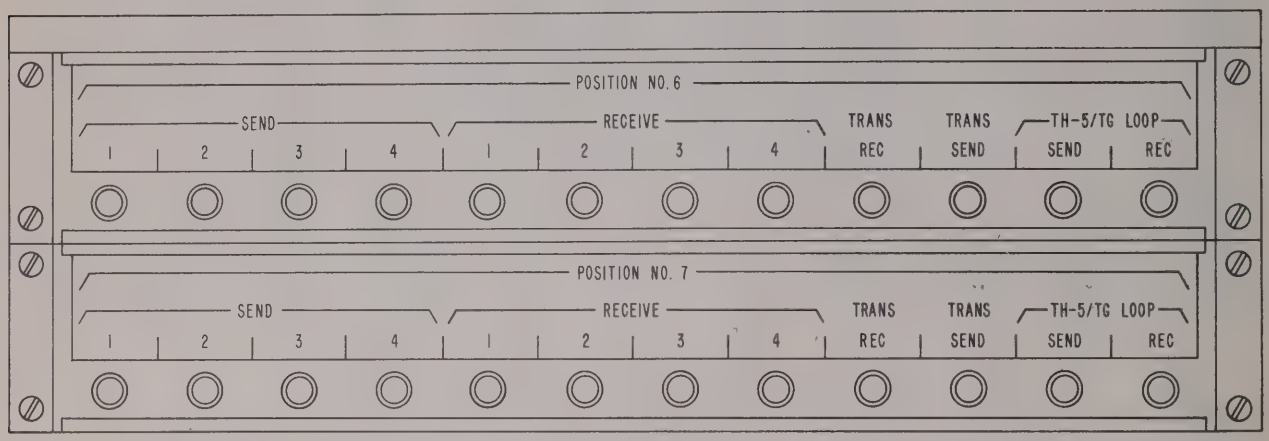


Figure 22. LINE CONTROL—MONITOR—PATCH PANEL, controls, indicators, and jack strip designations.



A. POSITION NO. 1 JACK PANEL



B. TWO-POSITION JACK PANEL (POSITIONS NO. 2 THROUGH NO. 7) TM5895-222-15-21

Figure 23. Jack panels.

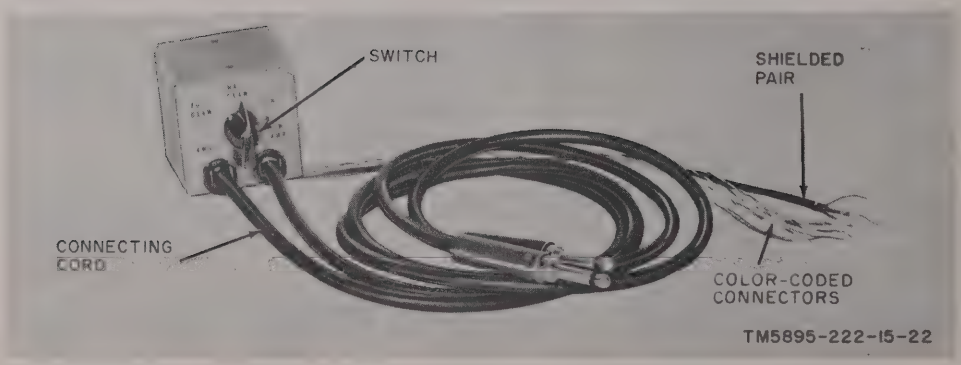


Figure 24. 2W–4W switch.

CHAPTER 2
INSTALLATION

Section I. INSTALLATION AND INTERCONNECTION OF EQUIPMENT

11. General

When an S-182/MGC-19 is received, perform the procedures in *a* through *l* below. When an AN/MGC-19 is received, perform the procedures in *a* and *j* through *l* below.

a. Uncrate and check the equipment (para 12).
b. Install the TT-76(*)/GGC's (para 14).
c. Install the TH-5/TG's (para 15).
d. Install the TT-4(*)/TG (para 16).
e. Install the TA-312/PT (para 17).
f. Store the TA-125/GT (para 18).
g. Store the multimeter (para 19).
h. Connect the LS-147C/FI (para 20).
i. Install the RA-87(*)'s (para 21).
j. Test the equipment (para 22, 23).
k. Perform the preoperational procedures (para 24-29).
l. Make the signal connections (para 30-32).

12. Uncrating and Checking

a. Uncrating Shelter (fig. 25).
(1) Remove the front and rear panels by removing the bolts. Remove the top and side panels by removing the bolts.
(2) Remove the four lag screws which secure the base of the crate to the shelter.
(3) Remove the sling assembly from its package on the floor of the shelter (fig. 12).
(4) Use a device capable of lifting 5,000 pounds to remove the shelter from the base of the crate. Attach the sling assemblies to the lifting eyes (fig. 27) on the top corners of the shelter and raise the shelter off the base of the crate.
(5) Remove the base of the crate and lower the shelter.

b. Checking. Check the contents of the S182/MGC-19 against the packing list. If the packing list is not available, use the table of components (para 6) to check the equipment which *probably* was packed.

c. Unpacking and Checking Major Components. When the major components (para 5) for the AN/MGC-19 are received in packing cases other than their own transit cases, follow the unpacking instructions given in appropriate technical manuals (appx I). After unpacking, check the equipment against the packing lists in the containers, if available. The table of components in the appropriate technical manual can be used when a packing list is not available, to check the items which *probably* were packed.

13. Test Equipment and Tools Required

To install and connect equipment in the S-182/MGC-19, a tool kit (such as tool roll kit (fig. 2 and para 6)) is required.

14. Installation and Interconnection of Teletypewriter Reperforator Transmitter TT-76/GGC

Perform the following operations on each TT-76(*)GGC:

a. Remove the TT-76(*)/GGC from the shipping container and case.

b. Remove the nuts from the mounting screws on each TT-76(*)/GGC base. Remove the mounting screws.

c. Place the TT-76(*)/GGC in position (fig. 8 and 9), aligning the four holes in the base of the unit with those in the mounting surface. Place bolts through the holes and fasten under the mounting surface with nuts.

d. Press the chad bin into its holder and secure it with the wire retainer.

e. Install the paper tape and the inking ribbon (TM 11-2225).

f. Plug the power cord of the TT-

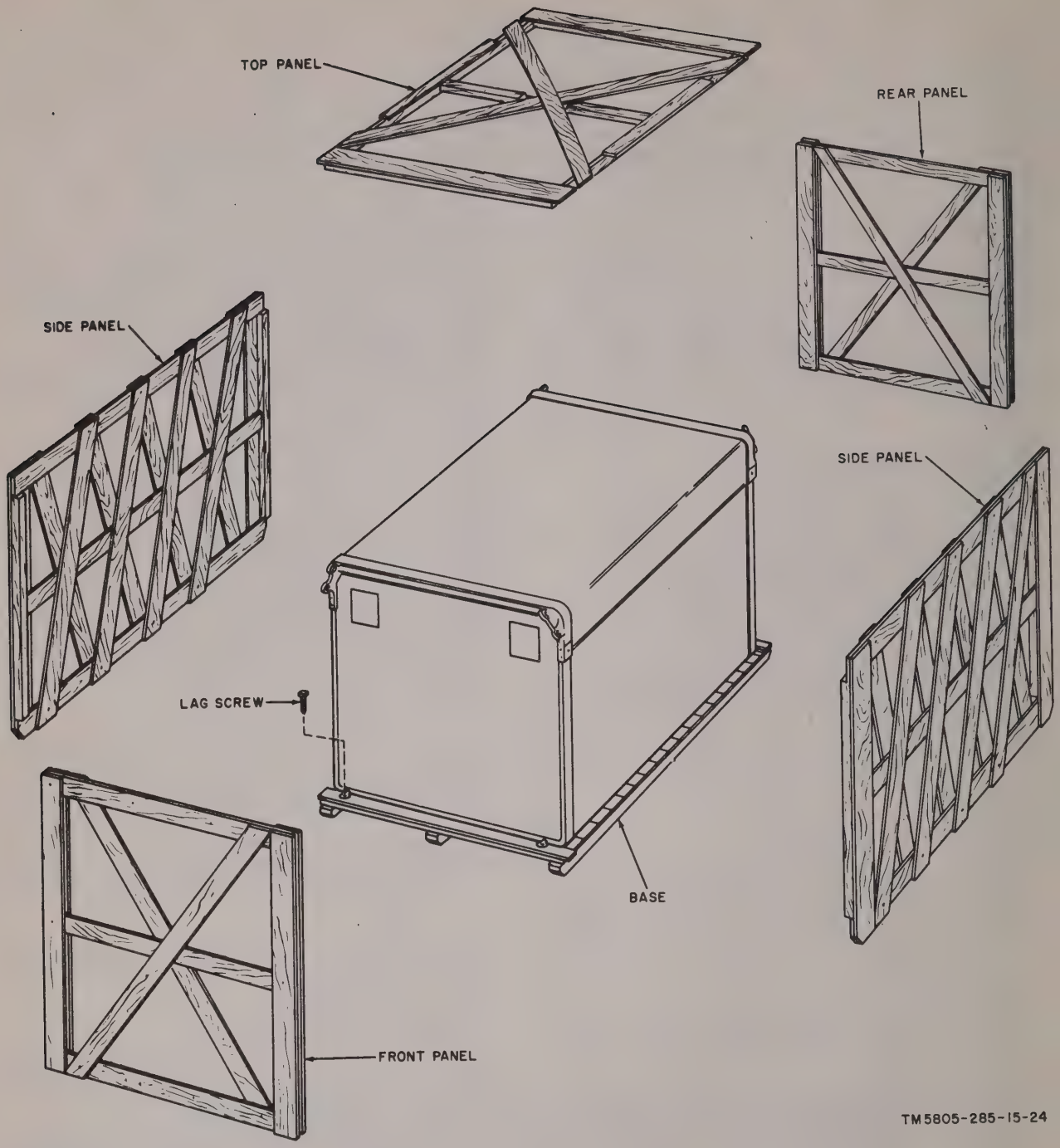


Figure 25. Typical crating diagram.

76(*)/GGC's into the appropriately marked receptacles in the power duct. Connect the ground leads.

15. Installation and Interconnection of Terminal, Telegraph TH-5/TG

Install the TH-5/TG's on the equipment shelves of the curbside and roadside walls (fig. 8 and 9) as follows:

a. Release the snap catches on the case and open the cover assembly.

b. Use a screwdriver to release the three captive screws on the front panel and remove the chassis from its case.

c. Turn the chassis of the TH-5/TG over and remove the bare strap wire

between terminals D2 and F2 (TM 11-5805-246-20).

d. Lift up the equipment rack designation plate, place the TH-5/TG chassis in the equipment rack, and fasten the three captive screws.

e. Remove the spare fuses from inside the cover assembly and place them in the spare fuseholder (fig. 10) or in a storage drawer. Store the case in a safe place.

f. Connect the TH-5/TG No. 2 (fig. 9) to the 2W-4W switch as follows:

(1) Use a screwdriver to release the three captive screws on the front panel and remove the TH-5/TG from its mounting in the equipment rack.

(2) Turn the chassis of the TH-5/TG over and solder the shielded wire pair from the 2W-4W switch to the D2 and F2 terminals (fig. 44).

(3) Replace the TH-5/TG in its mounting (*d* above) and make the following connections (fig. 44).

2W-4W switch		TH-5/TG No. 2 binding posts	
Wire marking	Wire color	Designation	Binding post No.
Wire marking	Wire color	Designation	Binding post No.
3	WHT-ORN-GRN	4W-S	3
4	WHT-BRN-BLU	4W-S	4
5	WHT-GRN	4W-R	5
6	WHT-GY-BLU	4W-R	6

g. Connect the signal wiring to TH-5/TG No. 1 and 3 through 8 as indicated in the chart below (fig. 40).

Wire color	TH-5/TG		
	Position	Designation	Binding post No.
WHT-BRN-GY	No. 1	No. 1	3
WHT-BRN-VIO			4
WHT-YEL			5
WHT-BLU-GRN			6
WHT-RED-RED	No. 2	No. 3	3
WHT-GY-RED			4
WHT-BLK-ORN			5
WHT-ORN-ORN			6
WHT-BRN-BRN	No. 3	No. 4	3
WHT-GRN-BRN			4
WHT-GRN-BRN			5
WHT-YEL-BRN			6
WHT-BRN	No. 4	No. 5	3
WHT-GRN			4
WHT-BLK			5
WHT-ORN			6
WHT-BRN-RED	No. 5	No. 6	3
WHT-GRN-RED			4
WHT-BLU-RED			5
WHT-YEL-RED			6
WHT-BRN	No. 6	No. 7	3
WHT-GRN			4
WHT-BLK			5
WHT-ORN			6
WHT-BRN-RED	No. 7	No. 8	3
WHT-GRN-RED			4
WHT-BLU-RED			5
WHT-YEL-RED			6

h. Insert the power cords of each TH-5/TG into the associated power duct receptacle.

16. Installation and Interconnection of Teletypewriter TT-4(*)/TG

a. Remove the immersionproof cover (TM 11-5815-206-12). Store the cover.

b. Remove the four wingnuts beneath the tabletop and remove the two holddown bars.

c. Position the TT-4(*)/TG on the tabletop. Place the holddown bars over the lashing hooks on the sides of the TT-4(*)/TG base and through the holes in the tabletop.

d. Replace and tighten the four wingnuts.

e. Use the procedures in (1) and (2) below to connect the teletypewriter connecting cords (fig. 4) to the TT-4(*)/TG and to set its LINE switch.

(1) Connect the prepared leads of the black teletypewriter connecting cord to SEND terminals 1 and 2; and connect the red teletypewriter connecting cord leads to REC terminals 3 and 4. Remove the shorting bar between terminals 2 and 3; and connect the shorting bar between terminals 5 and 6.

(2) For 20-milliampere (ma) line operation, set the D.C. LINE-VOICE FREQ. LINE switch to VOICE FREQ. LINE; for 60-ma line operation, set the switch to D.C. LINE.

f. Install the paper roll and ribbon in the TT-4(*)/TG (TM 11-5815-206-12).

g. Mount the dust cover on the TT-4(*)/RG. Fasten the web strap over the top of the top of the dust cover.

h. Plug the power cord of the TT-4(*)/TG into the appropriately marked receptacle on the power duct.

17. Installation and Interconnection of Telephone Set TA–312/PT

Install the TA-312/PT (less case) (fig. 26) under the roadside equipment shelf (fig. 9), as follows:

a. Loosen the wingnut on the side of the mounting bracket.

b. Pull out and rotate the clamping arm upward. Secure it with the wingnut.

c. Use a screwdriver to remove the flathead screw and holding plate (inside the mounting bracket).

d. Insert the holding plate into the buzzer recess on the side of the TA-312/PT.

e. Place the TA-312/PT into the mounting bracket and replace the flathead screw.

f. Operate the TA-312/PT LB-CB-CBS switch to LB.

g. Install two Batteries BA-30 in the battery compartment.

h. Connect the prepared leads of a telephone cord (fig. 2) to the LINE binding posts (fig. 26) on the TA-312/PT.

i. Connect the telephone plug into the PHONE jack on the jack panel (fig. 9).

18. Storage of Terminal Box TA–125/GT

Store the TA-125/GT on the mounting bracket beneath the curbside tabletop (fig. 8). Secure it with the web straps provided.

19. Storage of Multimeter

Multimeter AN/URM-105 is not provided as a component of the AN/MGC-19; however, it is available for use by maintenance personnel. Store it in cabinet drawer No. 3.

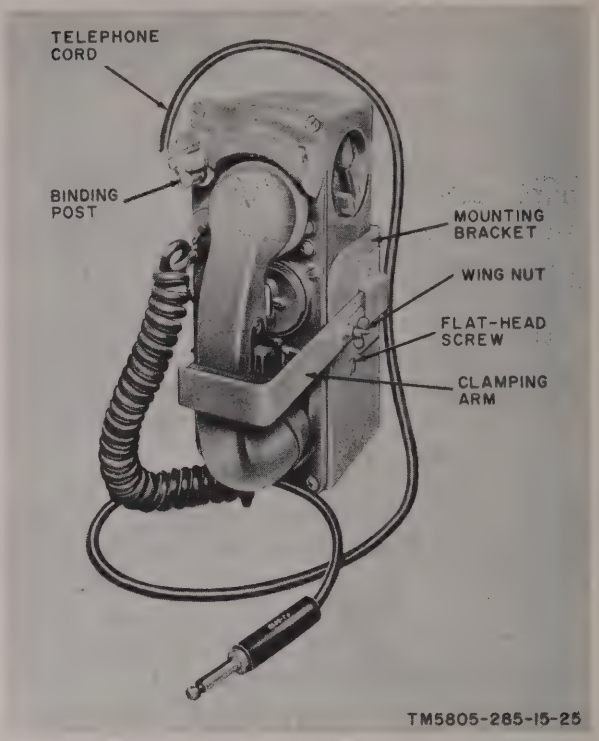


Figure 26. Telephone Set TA–312/PT installed in mounting bracket.

20. Interconnection of Intercommunication Station LS–147C/FI

a. Connect the prepared leads of a telephone cord to the two binding posts on the rear of the LS-147C/FI.

b. Connect the telephone plug into the INTERCOM jack on the nearby jack panel (fig. 9).

21. Installation and Connection of Rectifier RA–87(*)

Each RA-87(*) is installed under the tabletop at position No. 1 (fig. 9).

a. Operate each RA-87(*) ac power switch to OFF.

b. Remove the two nuts from each retaining bracket J-bolt; remove each retaining bracket.

c. Place one rectifier on the top shelf and one on the bottom shelf.

d. Place a retaining bracket around each rectifier. Install and tighten the nuts on each retaining bracket J-bolt.

e. Connect the ac power cord connector of the top shelf rectifier (RA-87(*) No. 1R) to ac outlet RA-87 NO. 1R. Connect the ac power cord connector of the bottom shelf rectifier (RA-87(*) NO. 2R) to ac outlet RA-87 NO. 2R.

f. Connect RECT 1 and RECT 2 dc power cord connectors to the 115VDC outlet of RA87(*) NO. 1R and RA-87(*) NO. 2R, respectively.

Section II. INSTALLATION TESTING OF EQUIPMENT

22. General

a. Make the ground and power connections (para 26 and 27) before starting the installation tests.

b. Energize the ac circuits (para 29).

c. Refer to paragraphs 28, 34, and 35 for information covering the controls and operation of the S-182/MGC-19 equipment.

23. Installation Testing of Teletypewriter Equipment

a. Preparation.

(1) Operate circuit breaker switches 4 through 8 in the power distribution panel (fig. 19) to ON. Turn on the TH-5/TG's and the RA-87(*)'s (para 34*d* and *e*).

(2) Perform the preinstallation service procedures for the TT-76(*)/GGC (TM 11-2225) and the TT-4(*)/TG (TM 11-5815-206-12).

(3) In the binding post signal entrance box (fig. 23), connect jumper wires between the binding posts for each position as follows: From LINE 1A and 1B to LINE 2A and 2B, respectively; from LINE 3A and 3B to LINE 4A and 4B, respectively; and so on to LINE 14. This procedure connects the SEND TT-76(*)/GGC at each position to the RECEIVE TT-76(*)/GGC at the same position (fig. 8 and 9).

b. Dc Circuits and Equipment.

(1) Prepare each TT-76(*)/GGC for 60-ma operation (TM 11-2225). Operate the TT-4(*)/TG D.C. LINE-VOICE FREQ. LINE switch to D.C. LINE (TM 11-5805-246-10).

(2) On the meter panel (fig. 22), operate the 115V.A.C. 60 CPS INPUT switches for SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R to ON. The glowlamp associated with each switch lights and the 115V.D.C. OUTPUT glowlamps on the send lines receive lines control panels light.

(3) Make the connections shown in A, figure 31.

(4) Operate the V.F.-D.C. switches for LINE PR NO. 1, 3, 5, 8, 10, 12, and 14 to D.C. and for LINE PR NO. 2, 4, 6, 7, 9, 11, and 13 to V.F. If any TT-76(*)/GGC runs open, operate the associated NORM-REV. switch to REV.

(5) Send from the keyboard and then from the transmitter distributor at each position (TM 11-2225). Error-free copy should be received at each position.

(6) As each position is being tested, monitor the messages with the TT-4(*)/TG (para 36*a*). Error-free copy should be received.

(7) On the meter panel (fig. 22), operate the 115V.A.C. INPUT switches for SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R to OFF. Turn off the TT-76(*)/GGC's and the TT-4(*)/TG.

c. Vf Circuits and Equipment.

(1) Prepare each TT-76(*)/GGC (TM 11-2225) for 20-ma operation.

(2) On the meter panel (fig. 22), operate each V.F.-D.C. switch to V.F.

(3) Make the connections for the circuits of position No. 1 as shown in C, fig. 31.

(4) Send from the keyboard and then from the transmitter-distributor of the SEND TT-76(*)/GGC (TM 11-2225) at the position. Error-free copy should be received at the RECEIVE TT-76(*)/GGC.

(5) Monitor the messages with the

TT-4(*)/TG (para 36*a*). Error-free copy should be received.

(6) Remove the patching and monitoring connections ((3) and (5) above) and set up positions 2 through 7 in turn for full-duplex vf operation (C, fig. 31). As each position is set up, repeat the procedures given in (4) and (5) above.

(7) After the equipment has been tested, remove the patch cords and monitoring connections and turn off the teletypewriter equipment; remove the jumper wires at the binding posts (*a*(2) above).

Section III. PREOPERATIONAL PROCEDURES

24. Siting

a. The location of Teletypewriter Operations Central AN/MGC-19 depends on the tactical situation or on other local considerations. When installed on the ground, locate it on firm, dry ground with good drainage; prepare and level the site. Place the shelter on concrete blocks or wooden beams, if possible, and position it to facilitate connections to the power and signal entrance boxes. When the shelter is installed in a truck, remove the ladder from the floor of the shelter (fig. 12) and secure it to the truck tailgate.

b. If the PU-294/G is used to supply ac power, locate it approximately 75 feet from the shelter to minimize generator noise interference with shelter operations.

25. Installation of Shelter

Note. Four men are needed to install the shelter on the ground or on a truck. A device capable of lifting 5,000 pounds, is also required.

a. Lifting and Loading Shelter (fig. 27). If the shelter is to be transported by helicopter, follow only the procedures in (1) through (4) below and observe the airlift warning notice mounted on the outside of the shelter. If the shelter is to be installed on a truck, follow the procedures in (1) through (10) below.

(1) Use the sling center hooks (nearest the turnbuckles (fig. 28)) to connect the sling assembly to the shelter lifting eyes.

(2) Place the sling assembly on top of the shelter.

(3) Connect the four sling hooks to the lifting ring.

(4) Place the lifting ring over the hook on the lifting device.

Warning: **To avoid injury to personnel and damage to equipment, only the personnel engaged in the actual loading operation should be permitted near the truck, lifting device, and shelter. To eliminate confusion, all instructions must come from the loading crew supervisor.**

(5) Tie a rope, 1/2-inch in diameter and at least 15 feet long to each rear towing eye.

(6) Check to see that all tools and equipment have been removed from the truck body. Lower the truck tailgate.

(7) Slowly lift the shelter from the ground to a position high enough to clear the body of the truck.

(8) Back the truck into position under the shelter.

Warning: **All personnel must remain clear of the truck while the shelter is being lowered into position.**

(9) Position a man at each of the ropes ((5) above) to guide the shelter into position, and slowly lower it into the truck body.

Note. The entrance door of the shelter must be at the rear of the truck, and the front of the shelter against the front of the truck body.

(10) Remove the lifting ring from the lifting hook and disassemble the lifting ring and sling hooks. Remove the sling center hooks from the shelter lifting eyes and the ropes from the shelter towing eyes.

b. Securing Shelter in Truck (fig. 28). Secure the shelter in the truck as follows:

(1) Use the sling hooks farthest from

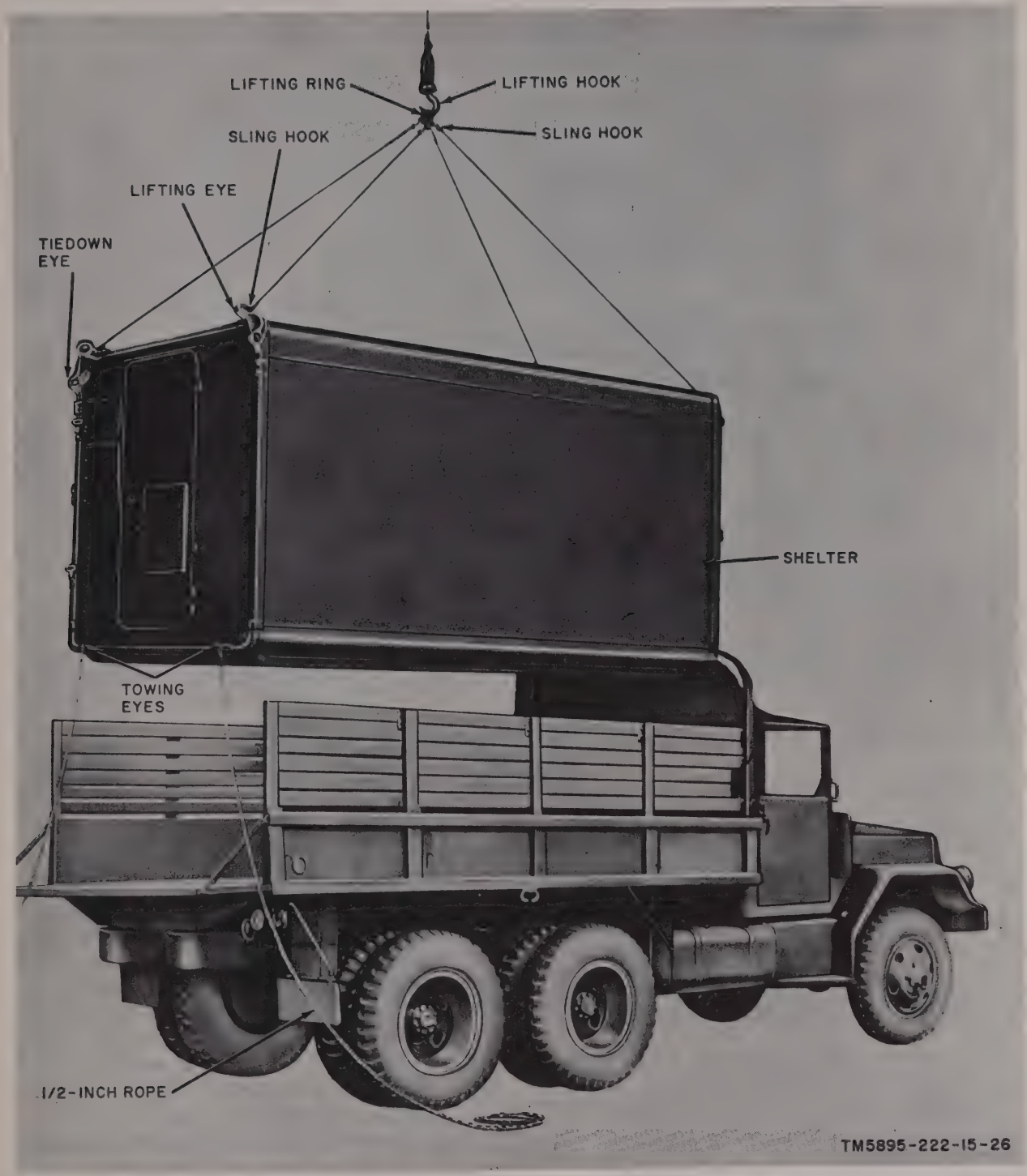


Figure 27. Loading shelter in truck.

the turnbuckles and hook each of the four sling hooks to a tiedown eye on the shelter.

(2) Use the sling assembly cable attached to the tiedown eye at the left-front of the shelter and place the sling hook nearest the turnbuckle under the side rail and behind the second cargo rack support from rear of the truck.

(3) Use the sling assembly cable attached to the tiedown eye at the left-rear of the shelter and place the sling hook nearest the turnbuckle under the side rail and in front of the second cargo rack support from the front of the truck.

(4) Follow the procedures in (2) and (3) above to secure the right side of the shelter.

(5) After the sling assembly has been attached to the side rails of the truck, tighten the turnbuckles.

Caution: Do not overtighten turnbuckles. To prevent the shelter from twisting in the truck body, tighten all turnbuckles equally at the same time.

(6) Raise and secure the truck tailgate.

c. Unloading Shelter. Reverse the loading and securing procedures (*a* and *b* above) to unload the shelter.

26. Grounding

The AN/MGC-19 must be properly grounded before ac power is connected. Select a grounding site that will not interfere with the entrance door, field wires, or power cable. Ground the AN/MGC-19 as follows:

a. Loosen the captive screws and lift the cover of the power and signal entrance box (fig. 14).

b. Use the cover support to secure the cover in the open position.

c. Remove the ground rods and the sledge hammer (fig. 11) from their mountings. Remove any paint or grease from the ground rods.

d. Select one site within 10 feet of the power and signal entrance box and another site within 10 feet of the PU-294/G; scoop out a small hole about six inches deep at each site.

e. Drive a ground rod into the hole at each site until the top of the ground rod is approximately three inches above ground level.

f. Saturate the ground around each rod with water to keep it moist.

g. Remove the 10-foot ground straps from cabinet drawer No. 2.

h. Connect one ground strap to the bottom GROUND TERMINAL in the power and signal entrance box (fig. 17) and to the nearby ground rod. Connect the other ground strap to the GND terminal of the PU-282/G and the nearby ground rod.

27. Power Connections

Perform the grounding procedures (para 26) before power is connected to the AN/MGC-19. Ac power for the AN/MGC-19 may be obtained from Trailer-Mounted Gasoline Generator Set PU-294/G, a central power source, a commercial power source, or an adjacent shelter.

a. Preliminary Procedures. Before making the power connections, proceed as follows:

(1) Operate all shelter circuit breaker switches and equipment switches to *off* position.

(2) Remove and store the tiedown bar in its clamp (fig. 4). Remove the power cable assembly and reel from the shelter.

(3) Unwind the power cable from the reel and remove the connector covers.

b. Trailer-Mounter Gasoline Generator Set PU-294/G.

(1) Remove the cover from the IN POWER 115V AC receptacles in the power and signal entrance box (fig. 17) and connect one end of the power cable assembly to the receptacle.

(2) Remove the power cable stub (fig. 2) from cabinet drawer No. 2. Connect the red and white leads of the power cable stub to one of the POWER LINE TERMINALS and the black lead to the other POWER

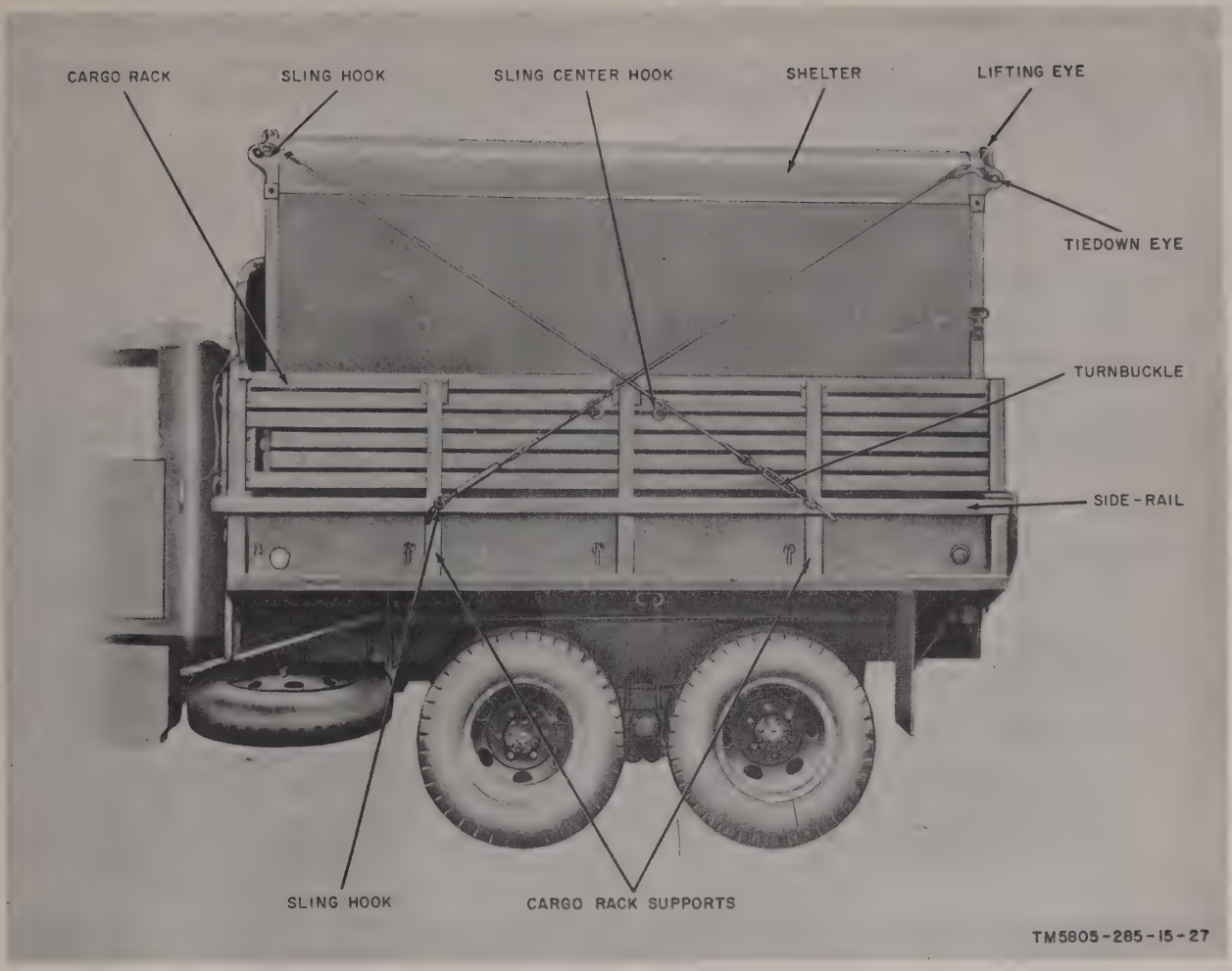


Figure 28. Securing shelter in truck.

LINE TERMINALS on the PU-286/G (TM 11-940A).

(3) Remove the cover from the power cable stub connector. Connect the power cable stub to the power cable.

c. *Commercial or Central Power.*

(1) Turn off or disconnect the power source before making any connections.

(2) Remove the power cable stub (fig. 2) from cabinet drawer No. 2. If the power source is a 50- to 60-cycle per second (cps), 120-240-volt, 2 phase, 3-wire distribution system, connect the red and white leads of the power cable stub to the neutral bus-bar and the

(3) If the power source is a 50- to 60-cps, 120-208-volt, 3-phase, 4-wire distribution system, connect black lead to the positive bus bar of the commercial source. the red and white leads of the power cable stub to the neutral bus bar and the black lead to the phase 1, phase 2, or phase 3 bus bar.

(4) Remove the cover from the power cable stub connector. Connect the power cable stub to one end of the AN/MGC-19 power cable.

(5) Remove the cover from the IN POWER 115V AC receptacle in the power and signal entrance box (fig. 17) and connect the power cable to the receptacle.

28. Controls and Instruments

This paragraph provides a description and the function of the controls and instruments of the S-183/MGC-19 components. For information concerning the controls and instruments of the major components, refer to the applicable technical manuals (appx I).

a. *Power Distribution Panel* (fig. 19).

Control, indicator or instrument	Description and function	
MAIN circuit breaker	Two internally ganged, 70-ampere circuit breakers. Provides overload protection for 115-volt ac power source and ON-OFF control of ac power to individual circuit breakers.	
Individual circuit breakers:	Provide on-off control and overload protection for the following circuits:	
	Rating (amp)	Circuit
1 LIGHTS	15	Fluorescent lights
2 BLOWER	15	Exhaust blower No. 1 and No. 2
3 HEATER 1	20	Electric heater No. 1 power receptacle.
4 CONVENIENCE	20	Convenience receptacles.
5 INTERCOM, RA-87 1 & 2, POS 1 & MON.	15	INTERCOM, TT-4A/TG, TT-76/GGC 1 and 2, and TH-5/TG No. 1 and 2, and RA-87 No. 1R and 2R power receptacles.
6 POS 2 & 3	15	TT-76/GGC 3 and 5, 4 and 6, and TH-5/TG No. 3 and 4 power receptacles.
7 POS 4 & 5	15	TT-76/GGC 7 and 8, 9 and 10, and TH-5/TG No. 5 and 6 power receptacles.
8 POS 6 & 7	15	TT-76/GGC 11 and 13, 12 and 14, and TH-5/TG No. 7 and 8 power receptacles.
9 HEATER 2	20	Electric heater No. 2 power receptacle.
Voltmeter	Ac voltmeter with 0-to 150-volt scale. Indicates ac input voltage from external power source.	
Ammeter	Ac ammeter with 0- to 100-ampere scale. Indicates total current drain from external power source by AN/MGC-19 components in use.	
Frequency meter	Frequency meter with 48-to 62-cps frequency scale. Indicates frequency of ac voltage from external power source.	
Glowlamps (9)	Neon lamps. Light when associated circuit breaker is ON.	

b. TH-5/TG Power Switches (Power Duct) (fig. 8 and 9).

Control or indicator	Description and function
TH–5/TG No. 1 & 2, 3 & 4, 5 & 6, and 7 & 8 switches.	Two-position ON-OFF switch controls ac power to designated TH–5/TG's power receptacle.
Glowlamp (4)	Neon lamp. Lights when associated TH–5/TG switch is ON.

c. Lighting (fig. 11)

Control or indicator	Description and function
BLACKOUT BYPASS switch	Two-position ON-OFF switch. Controls lighting circuits in the shelter for blackout operation. ON position permits fluorescent lights to be controlled by individual light switches. OFF position permits fluorescent lights to be controlled by door microswitch.
POWER INDICATOR NEON LAMP.	Lights when ac power is connected to shelter.
Door microswitch	Extinguishes fluorescent lights when shelter door is opened. (BLACKOUT BYPASS switch in OFF position.)
LIGHT 1 switch	Two-position ON-OFF switch. Controls two fluorescent light fixtures in each row (fig. 13).
LIGHT 2 switch	Two-position ON-OFF switch. Controls two fluorescent light fixtures in each row (fig. 13).

d. Blowers (fig. 13).

Control	Description and function
BLOWER 1 switch	Two-position ON-OFF switch. Controls operation of BLOWER 1.
BLOWER 2 switch	Two-position ON-OFF switch. Controls operation of BLOWER 2.

e. Intercommunication Station LS-147C/FI (fig. 21).

Control or indicator	Description and function
OFF-SEND control	Ganged on-off switch and potentiometer. Turns ac power on and off and controls volume of output signal. Switch must be *on* to originate a call.
PRESS TO TALK switch	Two-position nonlocking switch. Switch must be pressed to originate a call.
RECEIVE control	Potentiometer control. Controls speech volume to loudspeaker.
Glowlamp	Neon lamp. One-half of lamp glows when internal dc power supply is operating.

f. Line Control-Monitor-Patch Panel (fig. 22).

(1) *Meter panel.*

Control, indicator or instrument	Description and function
Milliammeter	Dc milliammeter with -100 to 0 to 100 millampere, full-scale deflection.
SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R switches and glowlamps.	Each switch is a two-position, ON-OFF switch and controls 115 volts ac to the associated RA–87(*). Each glowlamp is a neon lamp and lights when associated ON-OFF switch is in ON position.
SPARES LINE 21 through LINE 24 binding posts	Each pair of binding posts provides connection to indicated lines in the 26–pair cable or binding posts in the binding post signal entrance box.

(2) *Send and receive lines control panel.* The description and function given below apply to each LINE PR NO. (1 through 14) FUSE ALARM glowlamp, CURRENT ADJUST CONTROL, and the V.F.-D.C. and NORM.-REV. switches.

Control or indicator	Description and function
FUSE ALARM glowlamp.	Neon lamp. Lights when associated fuse blows.
CURRENT ADJUST control.	Continuously variable potentiometer. Provides adjustment of dc current supplied by associated RA-87(*).
V.F.-D.C. switch	Two-position ON-OFF switch. *Sw pos* — *Function* V.F. — Disconnects line circuit from output of associated RA-87(*) and permits teletypewriter circuit to be used with TH-5/TG. D.C. — Connects line circuit to output of associated RA-87(*) and permits teletypewriter circuit to be provided with dc.
NORM.-REV. switch.	Two-position ON-OFF switch. *Sw pos* — *Function* NORM. — Permits line circuit to be supplied with nonreversed polarity of dc from associated RA-87(*). REV. — Permits line circuit to be supplied with reversed polarity of dc from associated RA-87(*).
SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R glowlamps	Neon lamps. Each lamp lights when associated RA-87(*) is applying 115 volts dc to the panel.

(3) *Patch panel.* Except for the DC MA, SPARES, SERIES and MULTIPLE jacks, the description and functions given below apply to the jacks assigned to each POSITION.

Jack	Description and function
LINE jack	Cutoff jack. Provided a means of patching into the line circuit and opening the line circuit to the teletypewriter equipment.
EQUIP. jack	Cutoff jack. Provides a means of patching into the line to the teletypewriter equipment and opening the circuit to the line.
VF MON jack	Terminating jack. Provides a means of patching in parallel with the line circuit.
DC MON jack	Cutoff jack. Provides a means of patching in series with the line circuit.
TRANS SEND and TRANS REC.	Terminating jacks. Provide trunking circuits from the patch panel to similar jacks at the position jack panel.
TH-5/TG LINE: 4W-S jack	Terminating jack for 4W-S line circuit of the TH-5/TG at the position. Provides a means of patching the vf line output of the TH-5/TG to a line circuit.
4W-R jack	Terminating jack for 4W-R line circuit of the TH-5/TG at the position. Provides a means of patching the vf line output of the TH-5/TG to a line circuit.
TH-5/TG LOOP: REC	Terminating jacks. Trunking circuits from the patch panel to the similar jacks at the jack panel position, provide a means of patching the TH-5/TG SEND and REC jacks to EQUIP. jacks.
DC MA jack	Terminating jack. Terminates milliammeter in patch panel; provide a means of measuring dc line current.
SPARES jacks: LINE 21, 22, 23, and 24	Terminating jacks. Each jack provides connection to the indicated spare line in the 26-pair cable or binding posts in the binding post signal entrance box. Provide a means of connecting teletypewriter circuits to spare line circuits.
SERIES JACKS	Series-connected jacks. Permit a series arrangement of circuits.
MULTIPLE JACKS	Parallel-connected jacks; permit a parallel arrangement of circuits.

g. Jack Panels (fig. 23). Except for the PHONE and INTERCOM jacks, the descriptions and functions given below apply to the jacks at each position jack panel.

Jack	Description and function
SEND	Four series-connected terminating jacks. Used to connect a teletypewriter send circuit to a line circuit.
RECEIVE	Four series-connected terminating jacks. Used to connect a teletypewriter receive circuit to a line circuit.
TRANS SEND and TRANS RECEIVE	Terminating jacks. Provide trunking circuit from the jack panel to similar jacks at the position patch panel.
TH-5/TG LOOP: SEND and REC	Terminating jacks. Provide trunking circuit from jack panel to similar jacks at the position patch panel. Provide a means of patching to the position TH-5/TG SEND and REC jacks.
PHONE (position No. 1).	Terminating jack. Provides connection for TA-312/PT to local area telephone circuit.
INTERCOM (position No. 1).	Terminating jack. Provides connection for LS-147C/FI to to local area intercommunication circuit.

h. 2W-4W Switch (fig. 24).

Control	Description and function	
Switch	Switches the operation of the TH-5/TG No. 2 in conjunction with the 4W-2W-TEL switch in the TH-5/TG.	
	Sw pos	*Function*
	2W	Arranges TH-5/TG No. 2 and TT-4(*)/TG for half-duplex, 2-wire operation.
	HALF DX 4W	Arranges TH-5/TG No. 2 and TT-4(*)/TG for half-duplex, 4-wire operation. Not used in AN/MGC-19.
	FULL DX 4W	Arranges TH-5/TG No. 2 and TT-4(*)/TG for full-duplex, 4-wire operation.

i. Electric Heater (fig. 20).

Control	Description and function	
HEAT-OFF-FAN switch	Three-position, toggle switch.	
	Sw pos	*Function*
	HEAT	Applies ac power to heater elements and fan motor.
	OFF	Disconnects ac power from heater element and fan motor.
	FAN	Applies ac power to fan motor only.
TEMPERATURE CONTROL	Thermostat control. Regulates temperature provided by heating element.	
RESET pushbutton	Pushbutton that resets protective circuit breaker within unit.	

29. Energizing Ac Circuits

Perform the following preliminary starting procedures to prepare Teletypewriter Operations Central AN/MGC-19 for operation:

a. When the PU-294/G is used to supply ac power, start the PU-286/G (TM 11-940A).

b. When a commercial power source is used, apply power to the source terminals.

c. Operate the MAIN circuit breaker switch on the power distribution panel (fig. 19) to ON.

d. Operate the BLACKOUT BYPASS switch to ON. When blackout conditions are required, operate the switch to OFF.

e. Operate circuit breaker switch No. 1 LIGHTS to ON.

f. Operate LIGHT 1 and LIGHT 2 (fig. 11) switches to ON.

g. Check the voltmeter (fig. 19). It should indicate 115 to ±10 volts ac.

h. Check the ammeter. It should indicate nearly 0 ampere.

i. Operate circuits breaker switches No. 2 through 9 to ON.

Section IV. SIGNAL CONNECTIONS

30. Circuit Planning

Teletypewriter Operations Central AN/MGC-19 can be arranged to provide up to 7 teletypewriter circuits operating on either dc or vf full-duplex basis and up to 14 teletypewriter circuits operating on dc half-duplex basis (fig. 1). Circuits may be terminated at the AN/MGC-19 by using 26-pair cable and/or field wire connections.

a. Teletypewriter Circuits (fig. 29 and 40). The teletypewriter line circuits for the seven operating positions (fig. 8 and 9) are normally connected through the 26-pair cable and receptacle (fig. 17) in the power and signal entrance box or to the binding posts (fig. 18) in the binding post signal entrance box. The following chart identifies the TT-76(*)/GGC's at the seven operating positions with the lines in the 26-pair cable and the binding posts in the binding post signal entrance box.

TT-76(*)/GGC No.	Position No.	Line pair No. on binding post and in 26-pair cable
TT-76(*)/ GGC No.	Position No.	Line pair No. on binding posts and in 26-pair cable
2	1	1A-1B
1	1	2A-2B
4	2	3A-3B
3	2	4A-4B
6	3	5A-5B
5	3	6A-6B
8	4	7A-7B
7	4	8A-8B
10	5	9A-9B
9	5	10A-10B
12	6	11A-11B
11	6	12A-12B
14	7	13A-13B
13	7	14A-14B

(1) *Full-duplex operation* (fig. 18, 31, and 40). For each position that is to operate full duplex (either vf or dc), connect the send lines associated with the position to the odd-numbered pair in the 26-pair cable or the binding posts in the binding post signal entrance box, or to a spare pair in the cable or spare binding posts; and connect the receive lines associated with the position to the even-numbered pair of binding posts, or to a spare cable pair or binding posts.

(2) *Half-duplex operation* (fig. 18, 31, and 40). For each TT-76(*)/GGC that is to operate on a half-duplex basis, connect the lines to the pair in the 26-pair cable or the binding posts in the binding posts in the signal entrance box that are associated with the TT-76(*)/GGC.

b. Special Circuits. Connect the local line terminations for the TA-312/PT and the LS-147C/FI to pairs 25 and 26, respectively, of the 26-pair cable, or by field wire connections to the PHONE and INTERCOM binding posts (fig. 17).

31. Connection Procedures for 26–Pair Cables

To couple connectors on 26-pair cables (CX-4566/G (250 ft) and CX-4760/U (15 ft)), use the procedures in below. To couple the connectors to receptacle SIGNAL 1 in the power and signal entrance box (fig. 17), use the procedure in *a* below.

Caution: **Handle the 26-pair connectors carefully during the coupling and uncoupling procedures. Do not force or twist the connectors during installation. Never drop or place an uncovered 26-pair connector on the ground.**

a. Coupling 26-Pair Connectors (fig. 29).

(1) *Cover removal.*

(a) With each hand, grasp the knurled collar on each end of the connector and turn the collars until the open position is reached (A).

(b) Disengage the cam on top of the cover from the slot on the connector collar. Lift and remove the cover (B).

(2) *Coupling procedures.*

(a) Position the two 26-pair connectors so that the connector cams drop into the slots of the knurled collars and the male contacts of each connector are aligned with the female contacts of the other connector (C).

(b) Carefully press the two connectors together (D).

(c) Lock the two connectors by turning the knurled collars until the closed position is reached (E).

(d) Lock the two connector covers together.

(3) *Uncoupling procedures.*

(a) Unlock the 26-pair connectors by turning the knurled collars until the open position is reached (A).

(b) Carefully pull the connectors apart.

(4) *Cover replacement.*

(a) Unlock the two connector covers.

(b) Position the cover on top of the 26-pair connector.

(c) Engage the cam on the top of the cover in the slot on the connector collar (A).

(d) Lock the cover to the connector by turning the collars until the closed position is reached.

b. Coupling 26-Pair Connector to 26-Pair Receptacle. The cover removal and replacement procedure for a 26-pair receptacle (A through D, fig. 30) is the same as those described for the 26-pair connector (*a*(1) above). Connect and disconnect the 26-pair connector to the 26-pair receptacle as described in (1) and (2) below.

Note. The cable end of the connector is used as a reference for clockwise or counterclockwise rotations.

(1) *Connecting procedures* (fig. 30).

(a) Remove the covers and lock them together.

(b) Position the 26-pair connector on the receptacle so that the cams drop into the slots of the knurled collars and the male contacts are aligned with the female contacts (E and F).

(c) Carefully press the connector into the receptacle.

(d) Turn the lever on the receptacle knurled collar counterclockwise until the collar *just* engages the cam.

(e) Turn the knurled collar on the connector clockwise until the sleeve *just* engages the cam.

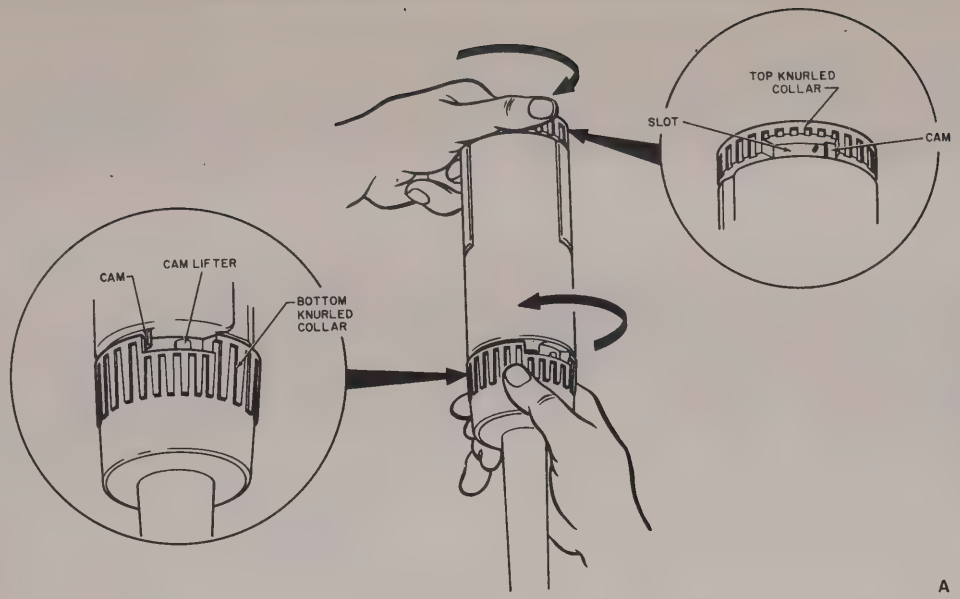
(f) Simultaneously turn the receptacle collar lever and the connector collar until the closed position is reached (G).

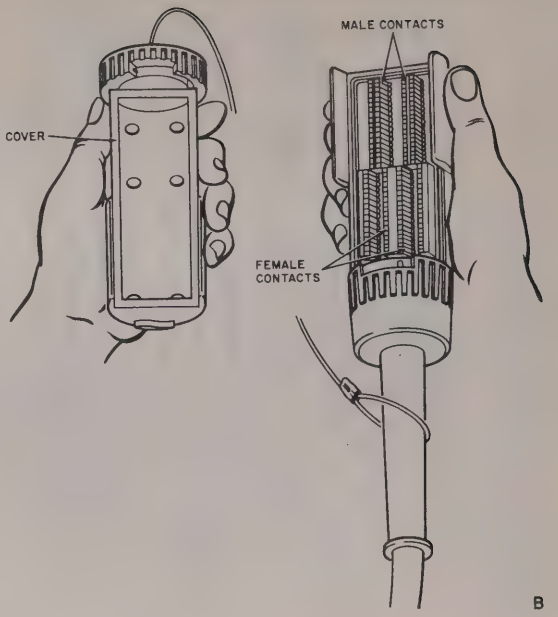
(2) *Disconnecting procedures.*

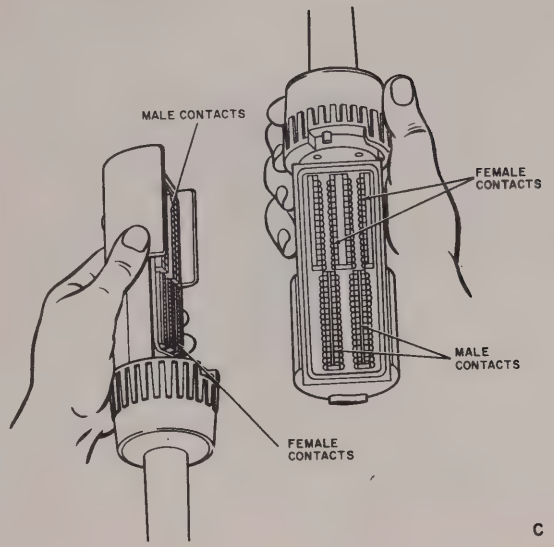
(a) Simultaneously turn the receptacle collar lever and the connector collar until the open position is reached.

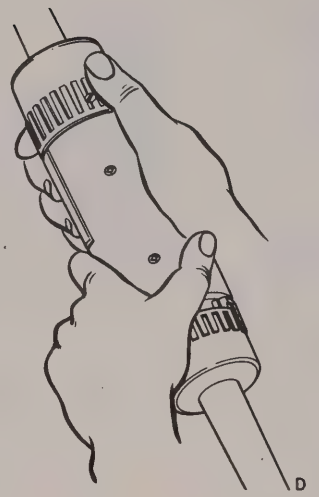
(b) Carefully pull the connectors apart.

(c) Replace the covers (*a* (4) above).









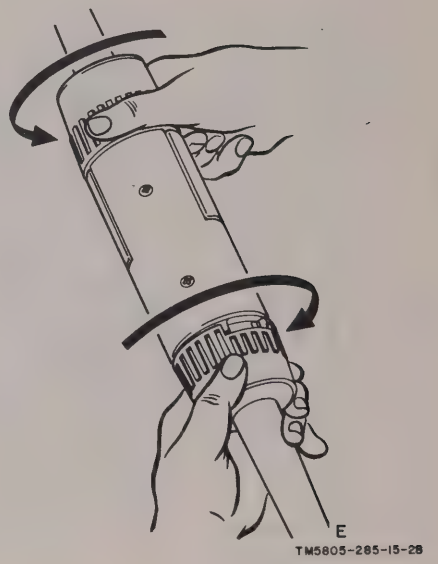


Figure 29. Coupling 26–pair connectors.

32. Field Wire Connections

a. Connect field wire pairs to the SIGNAL 1 binding posts in the binding post signal entrance box (fig. 18) and to the PHONE and INTERCOM binding posts in the power and signal entrance box (fig. 17).

(1) Loosen the captive screws and lift the cover of the power and signal entrance box and the binding post signal entrance box (fig. 17 and 18).

(2) Use the cover support to secure the cover in the open position.

(3) Press down on the binding post to open the wire slot. Place the field wire in the slot and release the binding post.

(4) Distribute and retain the wires in the bridle rings in each row of binding post pairs.

b. To use Distribution Box J-1077A/U, connect CX-4760/U (fig. 2) or field wire as desired.

(1) Remove the J-1077A/U from its mounting (fig. 8) and place it adjacent to the coupled connectors of the 26-pair cables.

(2) Uncouple the 26-pair connectors (para 31*a*(3)) and connect them to the 26-pair receptacles on the J-1077A/U (para 31*b*(1)).

(3) Release the fasteners and open the cover on the J-1077A/U.

(4) Connect the prepared leads of the CX-4760/U or field-wire pairs to the appropriate binding posts and secure the cover on the J-1077A/U.

Note. The wire colors and associated pair numbers of the CX-4760/U are same as those of the 26-pair cable (fig. 45).

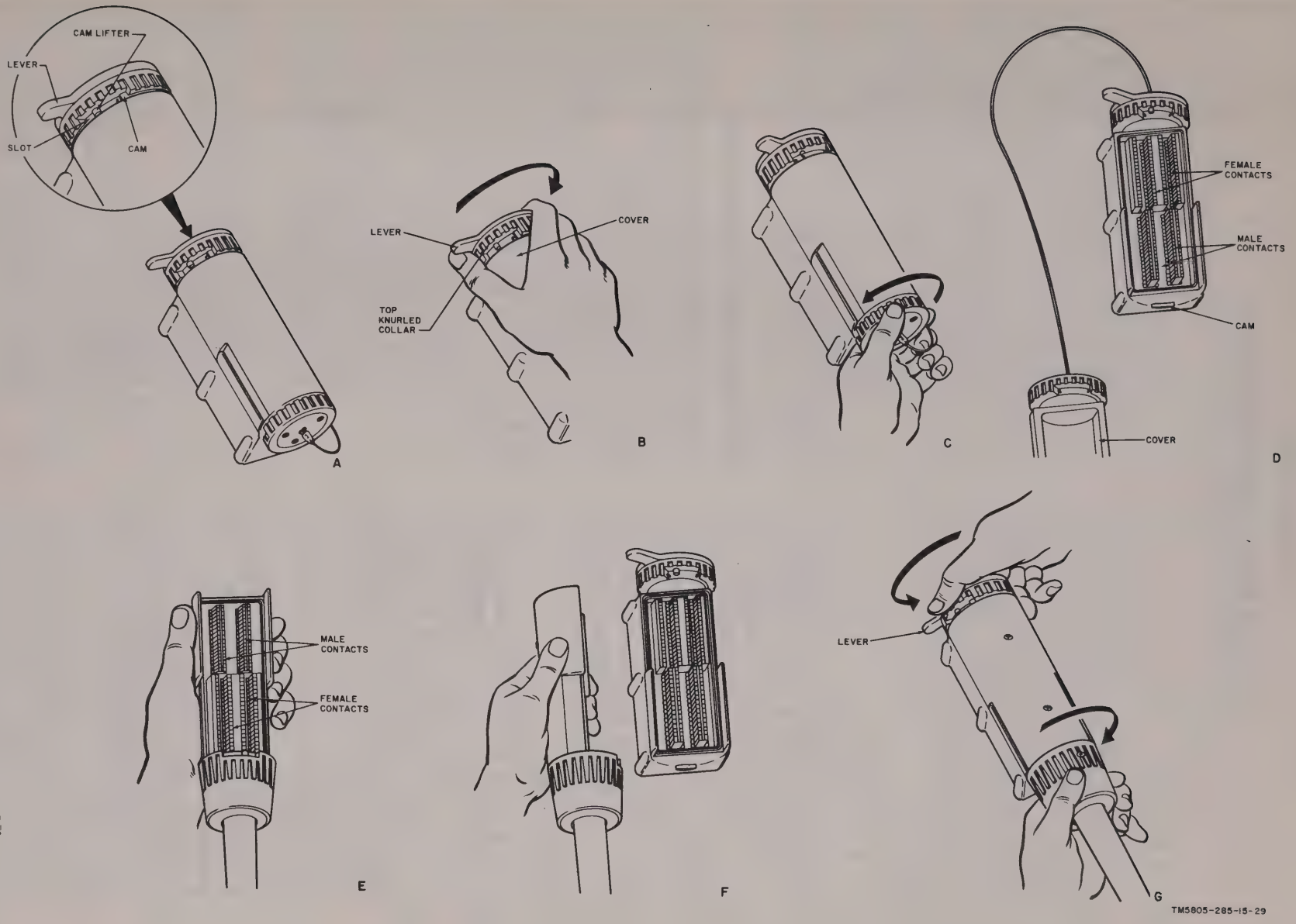


Figure 30. Connecting 26–pair connector to 26–pair receptacle.

CHAPTER 3
OPERATING INSTRUCTIONS

33. Types of Operation

The AN/MGC-19 (fig. 1) provides up to 7 vf or dc full-duplex (four-wire) or 14 dc half-duplex (two-wire) teletypewriter circuits over field wire or 26-pair cable line facilities. Sending from the TT-76(*)/GGC's may be from the keyboard or the transmitter distributor. The patch panel provides flexibility for line and position rearrangements.

34. Operating Procedures

Follow the procedures in through to place the shelter components in operation. Refer to paragraph 28 for an explanation of the applicable shelter controls and instruments. Arrange the teletypewriter circuit patches as determined by the circuit requirements. Lineup the teletypewriter equipment as required (para 35). Operate the equipment in accordance with the appropriate technical manuals (ppx I) and the organizational standard operating procedures (SOP).

a. Electric Heaters (fig. 20).

Caution: **Operate one heater only when all TT-76(*)/GGC's are in operation.**

(1) Operate the HEAT-OFF-FAN switch to the desired position.

(2) If the HEAT-OFF-FAN switch is operated to HEAT set the TEMPERATURE CONTROL to the desired setting.

b. Interconnection Station LS-147C/FI (fig. 21).

(1) Operate the OFF-SEND switch to 5 (approximately midposition). The glowlamp will light.

(2) Operate the PRESS TO TALK switch and speak into the speaker-microphone on the front panel; release the PRESS TO TALK switch to receive.

Note. The OFF-SEND switch does not have to be *turned on* to receive a call.

(3) Set the RECEIVE control to regulate the volume of incoming calls.

c. Exhaust Blowers.

(1) Open the air vent cover in the shelter door (fig. 14) and blower vent covers on the front of the shelter.

(2) Operate BLOWER 1 and BLOWER 2 ON-OFF switches in the ceiling power duct (fig. 13) to ON.

d. Power Ducts (fig. 8 and 9). Operate the TH-5/TG ON-OFF switches in the power duct at positions No. 1 through 7 to the ON position.

e. Rectifiers RA-87(*) No. 1R and No. 2R (fig. 9). Operate the ac POWER switch on each RA-87(*) to ON.

35. Teletypewriter Equipment Lineup

Refer to the chart in paragraph 30 and to figures 22 and 40 to identify the lines and controls on the LINE CONTROL-MONITOR-PATCH PANEL associated with the TT-76(*)/GGC's at each position.

a. Dc Full-Duplex and Half-Duplex Circuits. Either one or both TT-76(*)/GGC's at a position are used for dc full-duplex circuits. Each TT-76(*)/GGC at a position may be used for dc half-duplex circuits.

(1) Prepare the TT-76(*)/GGC(s) for 60-ma operation (TM 11-2225).

(2) For dc full-duplex circuits make the connections shown in A or B, figure 31, as required. For dc half-duplex circuits make the connections shown in A or D, figure 31.

(3) Operate the CURRENT ADJUST control to midposition for each line associated with the TT-76(*)/GGC being used.

(4) Operate the 115V.A.C. 60 CPS INPUT switches for SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R to ON. The glowlamp associated with each switch lights and the 115V.D.C. OUTPUT GLOWLAMPs on the send

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a. Electric Heaters (fig. 20).

Caution: **Operate one heater only when all TT-76(*)/GGC's are in operation.**

(1) Operate the HEAT-OFF-FAN switch to the desired position.

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(1) Operate the OFF-SEND switch to 5 (approximately midposition). The glowlamp will light.

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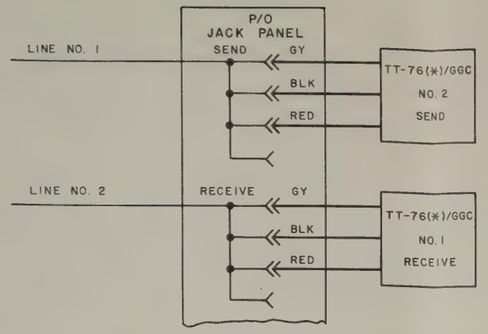
a. Dc Full-Duplex and Half-Duplex Circuits. Either one or both TT-76(*)/GGC's at a position are used for dc full-duplex circuits. Each TT-76(*)/GGC at a position may be used for dc half-duplex circuits.

(1) Prepare the TT-76(*)/GGC(s) for 60-ma operation (TM 11-2225).

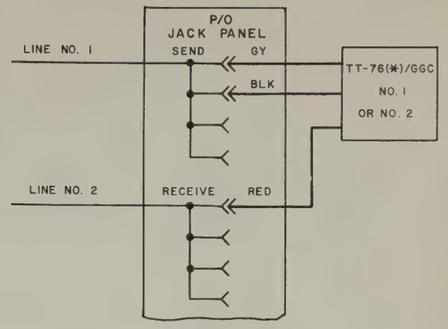
(2) For dc full-duplex circuits make the connections shown in A or B, figure 31, as required. For dc half-duplex circuits make the connections shown in A or D, figure 31.

(3) Operate the CURRENT ADJUST control to midposition for each line associated with the TT-76(*)/GGC being used.

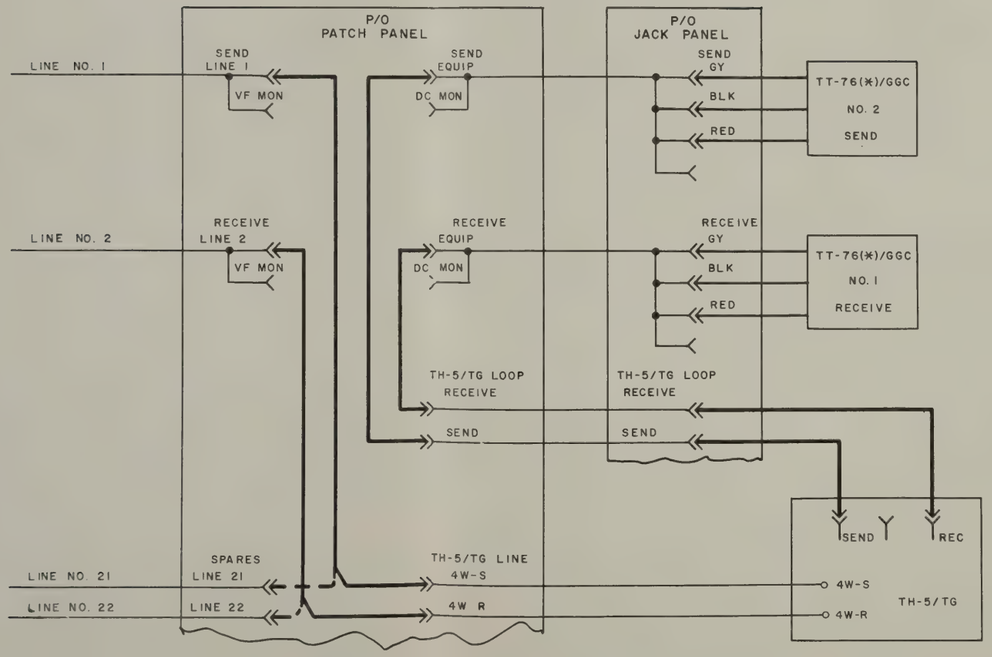
(4) Operate the 115V.A.C. 60 CPS INPUT switches for SEND RECTIFIER NO. 1R and RECEIVE RECTIFIER NO. 2R to ON. The glowlamp associated with each switch lights and the 115V.D.C OUTPUT GLOWLAMPs on the send



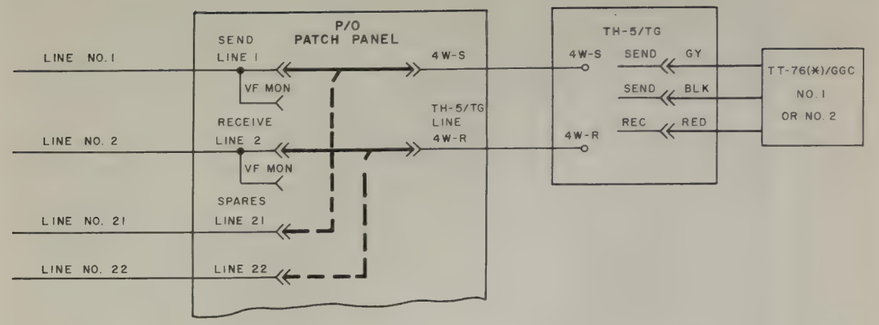
A. USING TWO TT-76(*)/GGC'S FOR FULL-DUPLEX DC OPERATION (FOUR-WIRE), OR EACH TT-76(*)/GGC FOR HALF-DUPLEX DC OPERATION (TWO-WIRE).



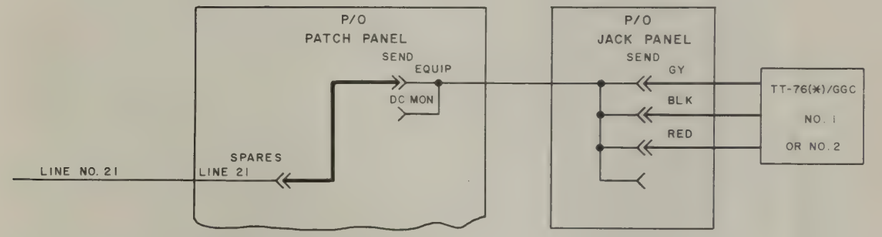
B. USING ONE TT-76(*)/GGC FOR FULL-DUPLEX DC OPERATION (FOUR-WIRE).



C. USING TWO TT-76(*)GGC'S FOR FULL-DUPLEX VF OPERATION (FOUR-WIRE).



D. USING ONE TT-76(*)/GGC FOR FULL-DUPLEX VF OPERATION (FOUR-WIRE).

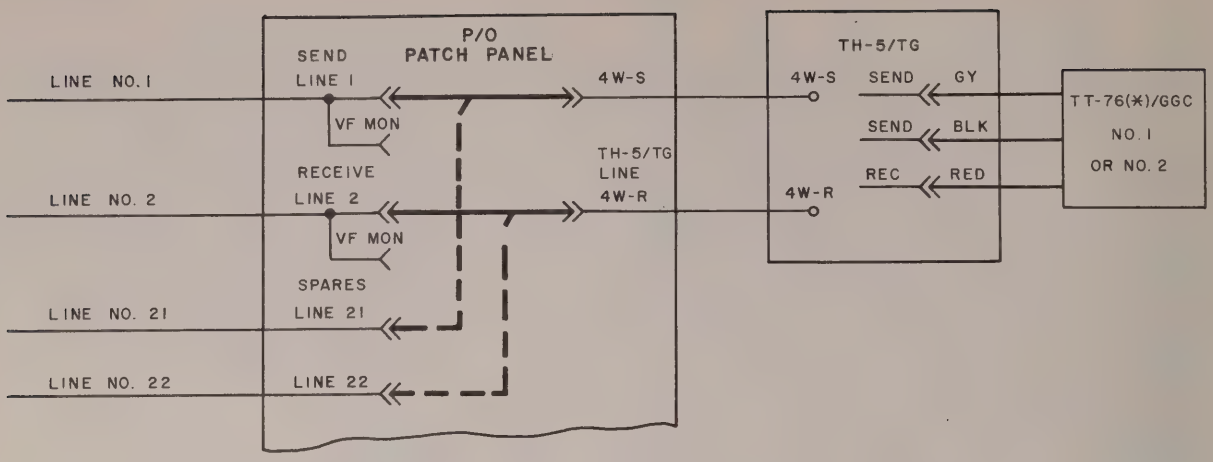


E. PATCHING TO SPARE LINE.

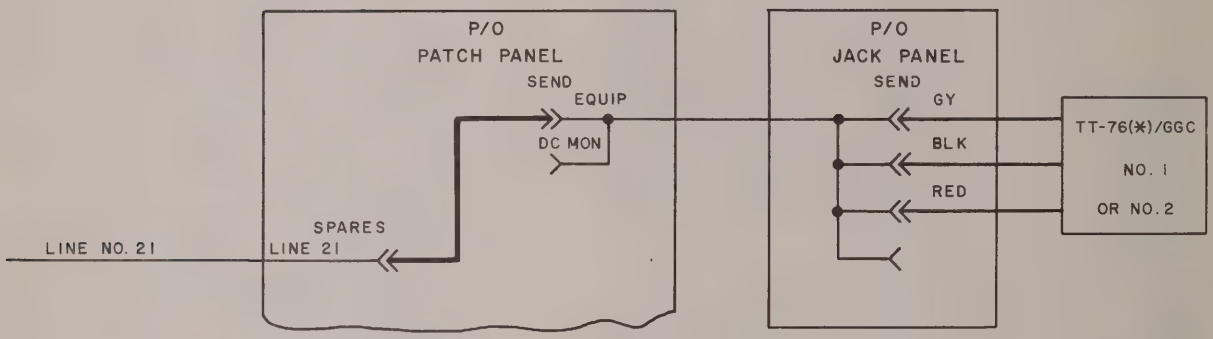
NOTES:

1. LINES, JACKS AND EQUIPMENT FOR POSITION NO. 1 ARE USED AS EXAMPLES. FOR OTHER POSITIONS, SUBSTITUTE EQUIVALENT LINES, JACKS, AND EQUIPMENT. FOR EXAMPLE, AT POSITION NO. 3, SUBSTITUTE TT-76(*)/GGC NO. 6 FOR TT-76(*)/GGC NO. 2 AND THE [LINE 5] AND [LINE 6] JACKS FOR THE [LINE 1] AND [LINE 2] JACKS, RESPECTIVELY.
2. ⟷ INDICATES PATCHING CORD.
3. ⟷ INDICATES ALTERNATE CONNECTION WITH PATCHING CORD.

Figure 31. Teletype circuits, typical connecting and patching diagrams.



D. USING ONE TT-76(*)/GGC FOR FULL-DUPLEX VF OPERATION (FOUR-WIRE).



E. PATCHING TO SPARE LINE.

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LINES, JACKS AND EQUIPMENT FOR POSITION NO. 1 ARE USED AS EXAMPLES. FOR OTHER POSITIONS, SUBSTITUTE EQUIVALENT LINES, JACKS, AND EQUIPMENT. FOR EXAMPLE, AT POSITION NO. 3, SUBSTITUTE TT-76(*)/GGC NO. 6 FOR TT-76(*)/GGC NO. 2 AND THE LINE 5 AND LINE 6 JACKS FOR THE LINE 1 AND LINE 2 JACKS, RESPECTIVELY.

⟷ INDICATES PATCHING CORD.

⟵ - - ⟶ INDICATES ALTERNATE CONNECTION WITH PATCHING CORD.

patching diagrams.

(6) To send a message, insert the 2W-4W switch black (4WS) cord plug into the VF MON jack of the line to be monitored (C or D, fig. 31) and transmit from the TT-4(*)/TG.

37. Stopping Procedures

Note. To turn the power off in an emergency, operate the MAIN circuit breaker to OFF.

a. Major Components. Refer to the applicable technical manuals for stopping procedures (appx I). Except in an emergency, turn off all major components before the associated circuit breakers in in the power distribution panel (fig. 19) are operated to OFF.

b. S-182/MGC-19 Components.

(1) *Electric heaters.* Operate the TEMPERATURE CONTROL to its lowest setting and the HEAT-OFF-FAN switch to OFF.

(2) *Intercommunication Station LS-147C/FI.* Operate the OFF-SEND switch to OFF.

Note. After the major components (*a* above) and the electric heaters have been turned off, allow the exhaust blowers ((3) below) to operate at least 10 minutes to evacuate all smoke and fumes before completing the stopping procedures and closing the shelter door.

(3) *Exhaust blowers.* Operate the BLOWER 1 and BLOWER 2 switches to OFF. Close the air filter in the shelter door and the blower vent covers on the front of the shelter.

(4) *Power duct.* Operate the TH-5/TG No. 1 through No. 8 ON-OFF switches in the power duct to OFF.

(5) *Meter panel.* Operate the RECEIVE RECTIFIER NO. 2R and the SEND RECTIFIER NO. 1R to OFF.

(6) *Circuit breakers and light switches.* Operate all circuit breaker switches and light switches to OFF.

38. Operation Under Adverse Climatic Conditions

Teletypewriter Central Office AN/MGC-19 can be operated in extremely cold or hot climates. The shelter offers complete protection from the elements for personnel and equipment; however, when the power and signal entrance box and the binding post signal entrance box are exposed to adverse conditions, the following precautions are necessary:

a. Cold Climates. Extreme cold causes cables and wires to become hard, brittle, and difficult to handle. Be careful when handling the cables and connecting them to the shelter so that kinks and unnecessary loops will not result in permanent damage. Make sure that binding posts, connectors, and receptacles on the outside of the shelter are free of frost, snow, and ice by replacing the covers on ((8)) connectors and receptacles and closing the covers of the entrance boxes when they are not in use. Lower the folding side panels when the entrance box covers are open. Replace the connector and receptacle covers as soon as they are disconnected; never drag or place an open connector in the snow.

Hot Climates. In hot, dry climates, connectors, receptacles, and binding posts are subject to damage from dirt and dust. Lower the folding side panels when the entrance box covers are open. Close the covers on the entrance boxes when they are not in use and replace the covers on the connectors and receptacles. Never drag or place an open connector on the ground.

c. Warm, Damp Climates. In warm, damp climates, the equipment is subject to damage from moisture and fungi. Wipe all moisture and fungi from the exterior of the equipment with a lint-free cloth.

CHAPTER 4
MAINTENANCE INSTRUCTIONS

Section I. OPERATOR'S MAINTENANCE

39. General Maintenance

Clean and inspect all components of Teletypewriter Operations Central AN/MRC-19 regularly. Detailed maintenance procedures pertaining to the major components are described in the appropriate technical manuals (appx I).

a. Use a clean, dry, lint-free cloth or brush for dusting.

b. For cleaning, if necessary, moisten the cloth or brush with Cleaning Compound (FSN 7930-395-9542); after cleaning, wipe dry with a cloth. Do not use cleaning compound on electrical contacts.

Warning: **Prolonged breathing of cleaning compound is dangerous. Make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame.**

c. Dry compressed air, not exceeding 60 pounds per square inch, may be used to remove dust from inaccessible places.

Warning: **Compressed air is dangerous and can cause serious damage to eyes, ears, nose, and other parts of the body. It can also cause mechanical damage to the equipment. Do not use compressed air to dry parts where cleaning compound has been applied.**

40. Tools, Test Equipment, and Materials Required

a. Tools and Test Equipment. The tools and test equipment required for operator's maintenance of the major components are listed in the applicable technical manuals (appx I). The tool roll kit (para 6 and fig. 2) is required for operator's maintenance of the S-182/MGC-19.

b. Materials.

	Item	Federal stock No.
1	Abrasive sheet; sandpaper #0000; 9 by 12 in. sheets	627500-0000[a]
2	Cloth, textile; cheesecloth; lint-free; 36 in.	408-2701[b]
3	Orangestick	5120-408-4036
4	Tape TL-83	5970-184-2003
5	Cleaning compound	7930-395-9542
6	Abrasive, sheet; crocus cloth, 9 by 11 in.	Ord[d]
7	Polish, metal; paste	6G1516[a]
8	Lubricating oil, general purpose, preservative (PL special).	14-0-2834-10[c]
9	Grease, graphite, aircraft (GGA)	9150-223-4001[c]
10	Lubricating oil, internal combustion engine, OE-10.	9150-265-9425[c]

[a] Signal Corps stock number.
[b] Interim Corps stock number.
[c] Quartermaster Corps stock number.
[d] Ordnance Corps Items.

41. Daily Preventive Maintenance

a. Check for completeness and general condition of the equipment and spare parts.

b. Remove dirt, dust, grease, and moisture from the exposed parts.

c. Remove rust, corrosion, fungi, dirt, and moisture from the binding posts, cable connectors and receptacles.

d. Inspect the field wire connections at the binding posts for good contact.

e. Inspect the lettering on designation strips for legibility.

f. Inspect the ground rods and ground strap connections for good contact.

g. Inspect all exposed cable for kinks, strains, moisture, fungi, loose terminals, and frayed, cut, or damaged insulation.

h. Tighten loose mounting hardware.

42. Weekly Preventive Maintenance

a. Clean and tighten components, racks, mountings, installations, cables, and connectors.

b. Inspect components, racks, mountings, installations, and exposed metal surfaces for rust, corrosion, and moisture.

c. Inspect the cables and wires for cuts, breaks, fraying, deterioration, kinks, and strain.

d. Inspect for looseness of accessible items such as switches, circuit breakers, signal and ac cable assemblies, and glow-lamps.

e. Clean the air filter, nameplates, meters, and clock.

f. Inspect the meters and clock for damaged glass and cases.

g. Wind the clock (fig. 10).

h. Inspect the shelter for proper support, installation, rust, corrosion, and moisture.

i. Check entrance boxes, exhaust blower vents, and air filter intake for cracks, leaks, damaged gaskets, dirt, and grease.

j. Check for normal operation (para 44).

43. Monthly Preventive Maintenance and Lubrication

a. Lubricate the door locks and latches. Use Grease, graphite, aircraft (GGA).

b. Lubricate the hinges on the shelter door, the entrance covers, the exhaust blowers, vents, and the air vent in the shelter door. Use oil (PL special or OE-10).

c. Lubricate all metal-to-metal moving parts.

d. Lubricate the major components as described in the applicable technical manuals (appx I).

Caution: **More frequent lubrication may be required in excessively hot, humid, or dusty areas. Do not overlubricate.**

e. Remove the shelter air filter and soak it in cleaning compound, benzine, or naphtha. Shake loose dirt from the air filter, air-dry it, and replace it in its mounting.

f. Check the fire extinguishers (fig. 10 and 11) for broken wire seals on the trigger mechanism. If the extinguisher has been used, or if there are signs of leakage, request that it be recharged by appropriate personnel.

44. Equipment Performance Checklist

This checklist is used to systematically check the AN/MGC-19. Only first echelon maintenance corrective measures are given in the *Corrective measures* column. If the corrective measures given do not correct the fault, request higher echelon maintenance. When using the checklist, start at the beginning and follow each step consecutively. If the trouble is suspected in a particular area, start checking at that point and continue the steps sequentially. Refer to the schematic-wiring diagrams (fig. 39 and 40) when checking circuits. When a fault or trouble is suspected in a major component item, refer to the applicable technical manual (appx I). First echelon repair procedures are given in paragraphs 45 through 53.

	Item No.	Item	Action or condition	Normal indications	Corrective measures
PREPARATORY	1	All switches, controls, and circuit breakers.	Operate to OFF	POWER INDICATOR NEON LAMP remains on.	Replace POWER INDICATOR NEON LAMP (para 46c).
	2	MAIN circuit breaker (fig. 19).	Operate to ON.		
	3	Voltmeter (fig. 19).	Use hand lantern and read	Voltmeter indicates 115 ± 10 volts.	*a.* Reset MAIN circuit breaker to OFF and then to ON. *b.* Check connections at ac power source. Replace power cable assembly.
	4	Ammeter (fig. 19).	Use hand lantern and read	Ammeter indicates zero.	Check to see that all other circuit breakers on power distribution panel are OFF.
	5	Frequency meter on power distribution panel.	Use hand lantern and read	Frequency meter indicates 60 ± 3 cps.	Adjust the PU-286/G (TM 11-940A): replace faulty PU-286/G.
	6	Circuit breaker switches (fig. 19): 1 LIGHTS.	*a.* Operate to ON	*a.* Glowlamp above circuit breaker lights.	*a.* Replace glowlamp (para 46c).
			b. Operate LIGHT 1 and LIGHT 2 switches to ON.	*b.* Fluorescent lights go ON.	*b.* Reset circuit breaker switch No. 1 to OFF and then to ON. If some, but not all, of the lights fail to go on, replace the faulty lamp or starter (para 46a and *b*).
			c. Release door microswitch by opening door.	*c.* Fluorescent lights go out. POWER INDICATOR NEON LAMP remains on.	*c.* Replace POWER INDICATOR NEON LAMP (para 46c).
			d. Operate BLACKOUT BYPASS switch to ON.	*d.* Fluorescent lights go on.	
		2 BLOWERS	*a.* Operate to ON	*a.* Glowlamps above circuit breaker lights.	*a.* Replace glowlamp (para 46c).
			b. Operate BLOWER 1 switch to ON (fig. 13).	*b.* Ammeter indicates approximately 3 amperes. BLOWER 1 operates.	*b.* Check inside blower cover for dirt, moisture, or obstruction (para 48).
			c. Repeat procedures listed in a and b above for BLOWER 2.		
		3 HEATER 1.	*a.* Operate to ON	*a.* Glowlamp above circuit breaker lights.	*a.* Replace glowlamp (para 46c).

	Item No.	Item	Action or condition	Normal indications	Corrective measures
PREPARATORY			*b.* Operate heater HEAT-OFF-FAN switch (fig. 18) to heat. Operate TEMPERATURE CONTROL to desired position.	*b.* Ammeter indicates 16 amperes. Warm air is blown from front of heater. When temperature rises to TEMPERATURE CONTROL setting, heat will be cut off.	*b.* Press heater RESET button.
			c. Operate HEAT-OFF-FAN switch to FAN.	*c.* Air (at room temperature) is blown from front of heater.	
		4 CONVENIENCE.	Operate to ON	Glowlamp above circuit breaker lights.	Replace glowlamp (para 46*c*). Refer to item No. 7.
		5 INTERCOM, RA-871 & 2, POS 1 & MON.	*a.* Operate to ON	*a.* Glowlamp above circuit breaker lights.	*a.* Replace glowlamp (para 46*c*). Refer to item No. 7.
			b. Operate SEND and RECEIVE RECTIFIER ON-OFF switches on LINE CONTROL-MONITOR-PATCH PANEL to on.	*b.* Glowlamp above each switch lights.	*b.* Replace glowlamp (para 46*c*).
				c. FUSE ALARM glowlamps do *not* light.	*c.* Replace associated fuse (para 46*d*).
		6 POS 2 & 3	Operate to ON	Glowlamps lights	Replace glowlamp (para 46*c*). Refer to item No. 7.
		7 POS 4 & 5	Operate to ON	Glowlamp lights	Replace glowlamp (para 46*c*). Refer to item No. 7.
		8 POS 6 & 7	Operate to ON	Glowlamp lights	Replace glowlamp (para 46*c*). Refer to item No. 7.
		9 HEATER 2.	*a.* Operate to ON	*a,* Glowlamp lights	*a.* Replace glowlamp (para 46*c*).
			b. Operate heater HEAT-OFF-FAN switch to HEAT. Operate TEMPERATURE CONTROL to desired position	*b.* Ammeter indicates above 16tamperes. Warm air is blown from front of heater. When temperature rises to thermostat temperature setting, heat will be cut off.	*b.* Press heater RESET pushbutton.
			c. Operate heater HEAT-OFF-FAN switch to FAN.	*c.* Air (at room temperature) is blown from front of heater	

	Item No.	Item	Action or condition	Normal indications	Corrective measures
EQUIP PERFORMANCE	7	S-182/MGC-19 equipment.	Operate as described in paragraph 34.		If the equipment (items 7 and 8) fails to operate, *reset* the appropriate circuit breaker switch. If equipment still fails to operate, replace it when possible with equipment known to be in good condition (para 57 through 63) and request higher echelon maintenance.
	8	Major components (para 5).	Operate equipment as described in applicable manuals (appx I).		
STOP	9	Major components	Perform stopping procedures as described in applicable technical manuals (appx I).		
	10	S-182/MGC-19 equipment.	Perform stopping procedures described in paragraph 37.		

45. Replacement of Hand Lantern Batteries and Bulb (fig. 32)

The hand lantern requires four Batteries BA-30 which are not supplied with the hand lantern. A spare bulb is stored inside the reflector case.

a. Replacing Batteries.

(1) Pull the battery case latch forward and raise the battery case cover.

(2) Insert four batteries in the case with the center brass caps

(3) Snap the battery case cover shut.

b. Replacing Bulb.

(1) Press the button on the bottom of the reflector case and lift out the reflector.

(2) Unscrew the brass cap on the rear of the bulb; remove the bulb and spring.

(3) Remove the spare bulb from inside the reflector case. Insert the bulb and spring in the reflector and tighten the brass cap.

(4) Place the reflector in the reflector case and snap it securely in position.

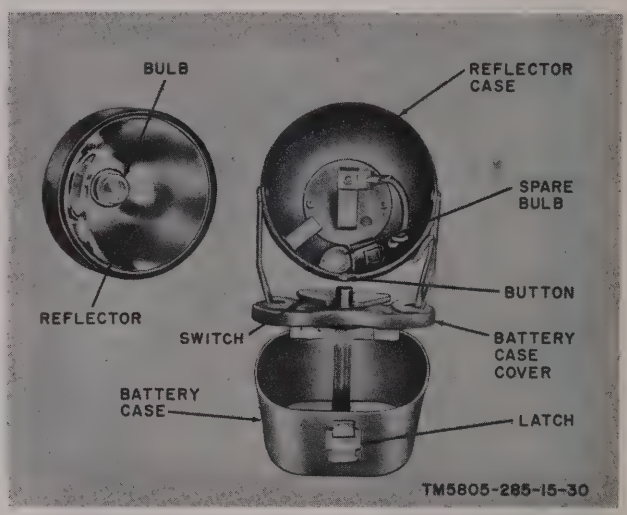


Figure 32. Hand lantern, identification of parts.

46. Removal and Replacement of Lamps, Starters, and Fuses

a. Fluorescent Lamp.

(1) Pull gently to remove the light shield from the fluorescent fixture.

(2) Rotate the lamp in its sockets 1/4 turn and remove it from the lampholders.

(3) Remove a spare lamp from the ceiling storage brackets (fig. 13).
(4) Align the lamp pins with the keyways in each lampholder.
(5) Press in and rotate the lamp 1/4 turn to lock it in the lampholders.
(6) Place the clips on the light shield over the lampholders; gently press the light shield in place.

b. Fluorescent Lamp Starter.
(1) Remove the lamp shield and lamp (*a*(1) and (2) above).
(2) Press in and twist the starter 1/4 turn counterclockwise; remove the starter.
(3) Remove a spare starter from the ceiling storage bracket (fig. 13). Insert the new starter; press in and turn it clockwise until it seats.
(4) Replace the lamp and light shield by reversing the removal sequence (*a*(4) through (6) above).

c. Neon and Incandescent Lamps. To remove a defective neon or incandescent lamp, unscrew it from its socket.

d. Fuses.
(1) Twist the fuseholder cap counterclockwise and remove it from its socket.
(2) Remove the defective fuse from the cap.
(3) Insert a new fuse in the cap; press in and rotate the cap clockwise in the fuseholder until it locks in place.

47. Removal and Replacement of Electric Heater (fig. 20)

a. Removal.
(1) Operate the HEAT-OFF-FAN switch to OFF.
(2) Remove the power cord connector from the HEATER receptacle (fig. 9 or 11).
(3) Turn the four turnlock fasteners that secure the heater to the mounting base.
(4) Unscrew the mounting base knob.
(5) Slide the heater to the right until it clears the flange on the mounting base and lift out the heater.

b. Replacement.
(1) Slide the heater onto the mounting base so that it engages the flange.
(2) Tighten the four turnlock fasteners.
(3) Replace and tighten the mounting base knob.
(4) Connect the power cord connector to the HEATER receptacle.

48. Removal and Replacement of Exhaust Blower Cover

a. Removal.
(1) Operate the associated BLOWER switch (fig. 13) to OFF.
(2) Remove the power cord connector from the power receptacle.
(3) Remove the 10 screws that secure the cover to the front wall and lift off the cover.

b. Replacement. Replace the cover. The sequence for replacement of parts is the reverse of the removal sequence (*a* above).

49. Removal and Replacement of LS–147C/FI

a. Removal.
(1) Operate the OFF-SEND switch to OFF.
(2) Remove the power cord connector from the CONVENIENCE 4 outlet.
(3) Remove the telephone cord plug from the INTERCOM jack.
(4) Loosen the captive wingnuts under the shelf and pull the LS-147C/FI forward.
(5) Lift and remove the unit from the shelf mounting bracket. Disconnect the telephone cord from the binding posts in the rear of the LS-147C/FI.

b. Replacement. Replace the LS-147C/FI. The sequence for the replacement of parts is the reverse of the removal sequence (*a* above).

50. Removal and Replacement of TA–312/PT (fig. 26)

a. Removal.
(1) Remove the telephone cord plug from the PHONE jack in position No. 1 jack panel (fig. 9 and 23)

and the prepared leads from the TA-312/PT binding posts.

(2) Loosen the wingnut on the side of the mounting bracket. Pull the clamping arm forward and upward.

(3) Remove the flathead screw on the side of the mounting bracket.

(4) Slide the TA-312/PT out of the mounting bracket and remove the holding plate from the buzzer recess on the side of the TA-312/PT. Remove the batteries from the battery compartment.

b. Replacement.

(1) Remove the replacement TA-312/PT from its carrying case (if applicable) and insert the holding plate into the buzzer recess.

(2) Place the TA-312/PT in the mounting bracket. Replace and tighten the flathead screw. Insert two Batteries BA-30 in the battery compartment.

(3) Position the clamping arm and tighten the wingnut.

(4) Connect the prepared leads of the telephone cord to the TA-312/PT binding posts and insert the cord plug into the PHONE jack on the jack panel.

51. Removal and Replacement of TH-5/TG

a. Use the following procedures to remove and replace TH-5/TG No. 1 and 3 through 8 (fig. 8 and 9).

(1) *Removal.*

(a) Operate the circuit breaker associated with the TH-5/TG (fig. 39) to OFF.

(b) Remove the power cord connector from the ac receptacle; tag and remove the wires from the line binding posts.

(c) Loosen the captive screws on the front panel.

(d) Pull the chassis forward and lift it from its rack.

(2) *Replacement.* Replace the unit. The sequence for the replacement of parts is the reversal of the removal sequence ((1) above). To restore the line wires ((1)(*c*) above), refer to paragraph 15*g* and use the wiring applicable to the position of the replaced TH-5/TG.

b. Use the procedures in (1) and (2) below to remove and replace TH-5/TG No. 2 (fig. 9).

(1) *Removal.*

(a) Perform the operations in *a* (1) above.

***Caution:* Be careful not to bend or strain the wiring connections to the terminals on the TH-5/TG chassis.**

(b) Remove the wires connected to terminals D2 and F2 on the TH-5/TG chassis.

(c) Remove the TH-5/TG.

(2) *Replacement.* Replace the unit. The sequence for the replacement of parts is the reversal of the removal sequence ((1) above). To install the wiring from the 2W-4W switch on the TH-5/TG, refer to paragraph 15*f*(2) and (3).

52. Removal and Replacement of Teletypewriter TT-4(*)/TG

a. Removal.

(1) Operate the TT-4(*)/TG LIGHT and MOTOR switches to OFF.

(2) Remove the power cord connector from the ac receptacle.

(3) Loosen the web strap across the top of the dust cover. Remove the dust cover.

(4) Tag and remove the teletypewriter connecting cords from the binding posts on the side of the TT-4(*)/TG. Replace the dust cover.

(5) Loosen the four wingnuts beneath the tabletop. Remove the holddown bars and lift the TT-4(*)/TG from the tabletop.

b. Replacement. Remove and store the immersionproof cover (if applicable) of the replacement TT-4(*)/TG. Replace the TT-4(*)/TG. The sequence for replacement is the reverse of the removal sequence (*a* above).

53. Removal and Replacement of Teletypewriter Reperforator Transmitter TT-76(*)/GGC

a. Removal.

(1) Operate the TT-76(*)/GGC power switch to OFF.

(2) Disconnect the connecting cords and the power cable.

(3) Remove the four wingnuts beneath the shelf on the tabletop and lift the TT-76(*)/GGC from its position.

b. Replacement. Replace the TT-76(*)/GGC. The sequence for replacement is the reverse of the removal sequence (*a* above).

54. Removal and Replacement of Rectifier RA-87(*)

a. Removal.

(1) Operate the RA-87(*) power switch to OFF.

(2) Remove the dc power cord connector (RECT 1 or RECT 2) from the 115VDC outlet on the RA-87(*). Remove the RA-87 ac power cord from the ac outlet (RA-87 NO. 1R or RA-87 NO. 2R).

(3) Remove the two nuts from the retaining bracket J-bolts and remove the retaining bracket.

(4) Remove the RA-87(*) from the shelf.

b. Replacement. Replace the RA-87(*). The sequence for replacement of parts is the reverse of the removal sequence (*a* above).

Section II. ORGANIZATIONAL, FIELD, AND DEPOT MAINTENANCE

Note. The maintenance allocation chart (appx II) indicates the maintenance functions and tools authorized for each maintenance echelon.

55. Troubleshooting Information

a. Procedures for localizing troubles to components or wiring within the AN/MGC-19 are given in the equipment performance checklist (para 44).

b. Procedures for troubleshooting components, parts, and wiring of the S-182/MGC-19 are given in paragraph 56.

c. Procedures for troubleshooting major components of the AN/MGC-19 are given in appropriate technical manuals (appx I). Refer to paragraphs 50 through 54 for removal and replacement of major components.

d. The tools and test equipment required for maintenance of the S-182/MGC-19 are: tool roll kit (para 6 and fig. 2), tool kit, general mechanics, Soldering Iron TL-117, and a multimeter (such as Multimeter AN/URM 105 (TM 11-6625-203-12), or equal).

56. Troubleshooting and Repair Procedures

Warning: Be extremely careful when performing troubleshooting procedures; dangerous voltages are present in the equipment.

Isolate defective components, parts, or wiring of the S-182/MGC-19 by making appropriate voltage, resistance, or continuity tests with Multimeter TS-297/U, or when practical, isolate trouble in signal circuits by monitoring. Use figure 39 when isolating trouble in the power circuits; use figure 40 for signal circuits. Repair or replace components, parts, or wiring. Use the chart below for references to repair procedures.

Part or component	References	
	Paragraph	Figure
Circuit breaker switches No. 1 through 9.	59*a*, *b*	35, 39
CURRENT ADJUST controls	61*b*	38, 40
Current transformer	59*a*, *c*	35, 39
Door microswitch	62*b*	39
Electric heater	57	33, 42
Exhaust blower	58	34, 43
Fluorescent light fixture	46, 63	39
Intercommunication Station LS–147C/FI.		40, 46
MAIN circuit breaker switch	59*a*, *b*	35, 39
Meters	59*d*	35, 39
Milliammeter	61*a*	38, 40
Power duct switches	62*a*	39
Shelter patching	64	39
Toggle switches	61*c*	38, 40
26–pair receptacle	60	36, 37, 45

57. Electric Heater Repairs (fig. 33)

a. Preliminary Procedures. Before performing the repair procedures in *b* through *h* below, remove the heater from its mounting base (para 47) and remove the back plate and bottom plate as described in (1) through (4) below.

(1) Remove the four screws that secure the bottom plate to the heater.

(2) Remove the two screws that secure the backplate to the bottom plate, and remove the bottom plate.

(3) Loosen the power cord clamp on the backplate.

(4) Remove the four screws that secure the backplate to the heater and remove the backplate.

b. Removal and Replacement of Power Cord.

(1) *Removal.*

(a) Loosen the screws that secure the power cord leads to the terminal board.

(b) Pull the power cord out of the clamp in the backplate.

(2) *Replacement.*

(a) Insert a new power cord through the clamp in the backplate.

(b) Connect the leads to the terminal board.

c. Removal and Replacement of Temperature Control Unit.

(1) *Removal.*

(a) Loosen the screws that connect the two wires to the temperature control unit.

(b) Remove the two screws that secure the unit to the cabinet and remove the unit.

(2) *Replacement.*

(a) Insert the TEMPERATURE CONTROL switch on the replacement unit through the slot in the cabinet. Replace and tighten the screws.

(b) Connect the two wires to the temperature control unit.

d. Removal and Replacement of HEAT-OFF-FAN Switch.

(1) *Removal.*

(a) Unsolder the three wires and strap connected to the switch.

(b) Remove the ringnut that secures the switch to the top of the cabinet and remove switch.

(2) *Replacement.*

(a) Solder the strap and the three wires to the replacement switch.

(b) Position the switch and tighten the ringnut.

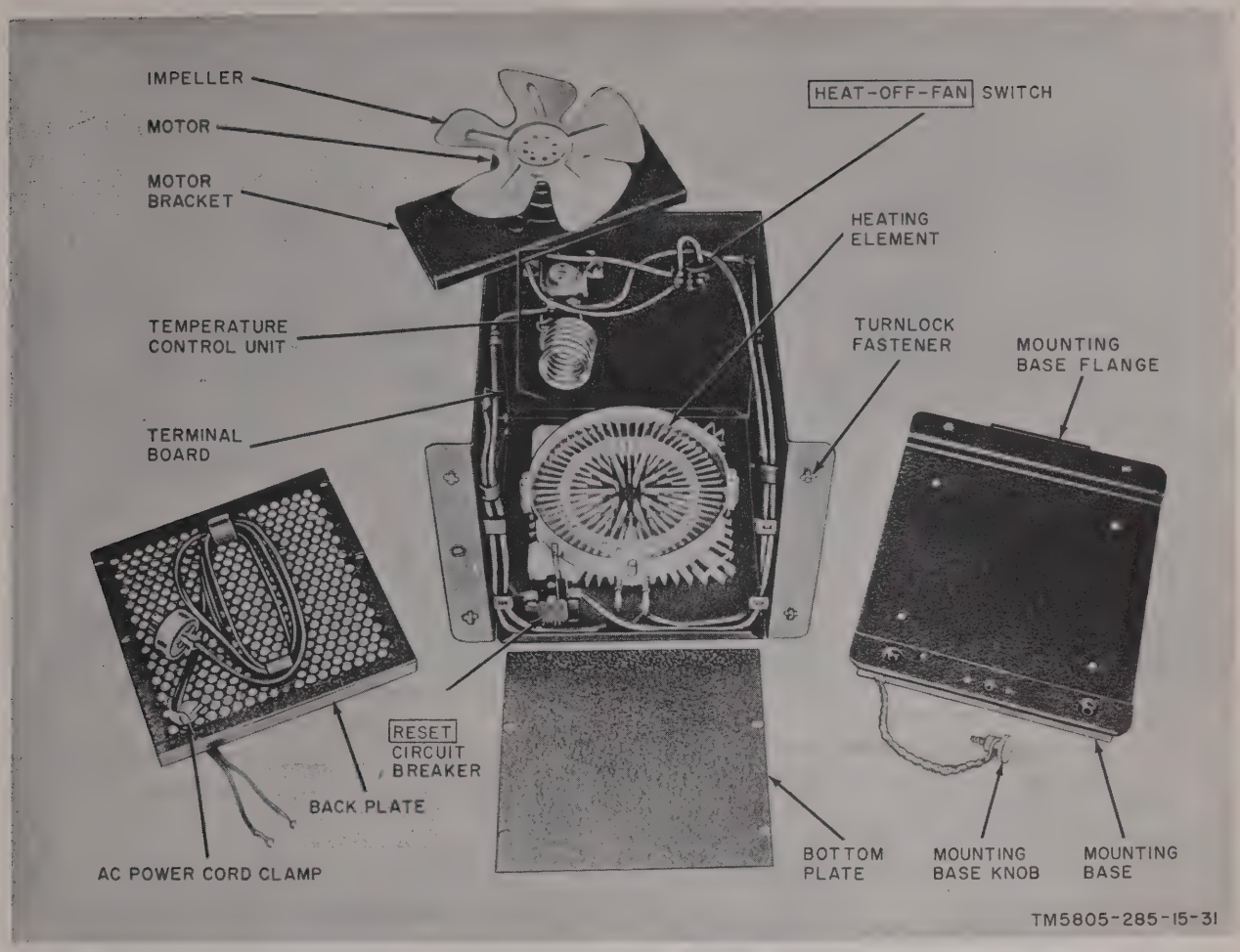


Figure 33. Electric heater, rear view, identification of parts.

e. *Removal and Replacement of RESET Circuit Breaker.*

(1) *Removal.*

(a) Loosen the screws that connect the two insulated wires to the circuit breaker. Loosen the bolt that secures the bare copper wire to the heating element.

(b) Remove the two screws that fasten the circuit breaker to the cabinet and remove the circuit breaker.

(2) *Replacement.*

(a) Connect the two insulated wires to the replacement circuit breaker. Connect the bare copper wire to the heating element.

Caution: **Do not alter the shape or length of the bare copper wire.**

(b) Position the circuit breaker and replace and tighten the screws.

f. *Removal and Replacement of Motor.*

(1) *Removal.*

(a) Remove the four screws that secure the motor bracket to the cabinet and lift out the motor and bracket.

(b) Tag and disconnect the motor leads at the HEAT-OFF-FAN switch and at the taped splice in the heating element cable.

(c) Remove the three screws that secure the motor to the bracket.

(d) Unscrew the metal fastener that secures the impeller to the motor shaft and remove the impeller.

(2) *Replacement.*

(a) Position and secure a replacement motor in the bracket. Replace the impeller and tighten the metal fastener.

(b) Replace the motor bracket in the cabinet and connect the motor leads ((1) (b) above).

g. Removal and Replacement of Heating Element.

(1) *Removal.*

(a) Remove the four screws that secure the motor bracket to the cabinet and remove the motor bracket.

(b) Loosen the bolt that secures the bare copper wire from the circuit breaker to the heating element and remove the wire.

Caution: **Be extremely careful when removing this lead. Do not alter the length or shape of the bare copper wire.**

(c) Tag and remove the wire connectors from the plug-in terminals on the heating element.

(d) Remove the screws that secure the heating element to the cabinet. Be careful not to bend the louvers on the front of the cabinet during the removal procedures.

(2) *Replacement.*

(a) Position the replacement element and replace and tighten the screws.

(b) Connect the wires to the plug-in terminals of the heating element.

(c) Replace the bare wire connected to the circuit breaker ((1) (b) above).

(d) Position the motor bracket in the cabinet and replace and tighten the screws.

h. Removal and Replacement of Impeller.

(1) *Removal.*

(a) Remove the impeller as described in *f* (1) (a) through (d) above.

(b) Slide the replacement impeller onto the motor shaft and tighten the fastener.

(c) Replace the motor bracket in the cabinet.

58. Exhaust Blower Repairs
(fig. 34)

a. Preliminary Procedures. Before performing any of the repair procedures in *b* through *d* below, remove the exhaust blower cover (para 48) and the power cord connector from its receptacle (fig. 13).

Caution: **Do not bend the impeller blades when removing or replacing the exhaust blower.**

b. Removal and Replacement of Capacitor.

(1) *Removal.*

(a) Loosen the capacitor clamp screw.

(b) Remove the power cord clamp from the motor bracket.

(c) Slide the capacitor out of the clamp.

(d) Tag and disconnect the motor leads and the power cord leads from the capacitor terminals.

(2) *Replacement.*

(a) Connect the motor leads and the power cord leads to the replacement capacitor (fig. 43).

(b) Slide the capacitor into the clamp and tighten the screw.

(c) Replace the power cord clamp.

c. Removal and Replacement of Power Cord.

(1) *Removal.*

(a) Remove the capacitor from the clamp as described in *b*(1) above.

(b) Tag and disconnect the power cord leads from the capacitor and motor leads.

(2) *Replacement.*

(a) Connect the new power cord leads to the capacitor and motor leads (fig. 43).

(b) Slide the capacitor into the clamp and tighten the screw.

(c) Replace the power cord clamp.

d. Removal and Replacement of Motor and Impeller.

(1) *Removal.*

(a) Remove the two screws from the bottom edge of the plate that holds the exhaust blower to the front wall.

(b) Lift the exhaust blower away from the wall.

(c) Remove the four bolts that secure the blade guard and motor brackets to the blower ring.

(d) Tag and disconnect the motor

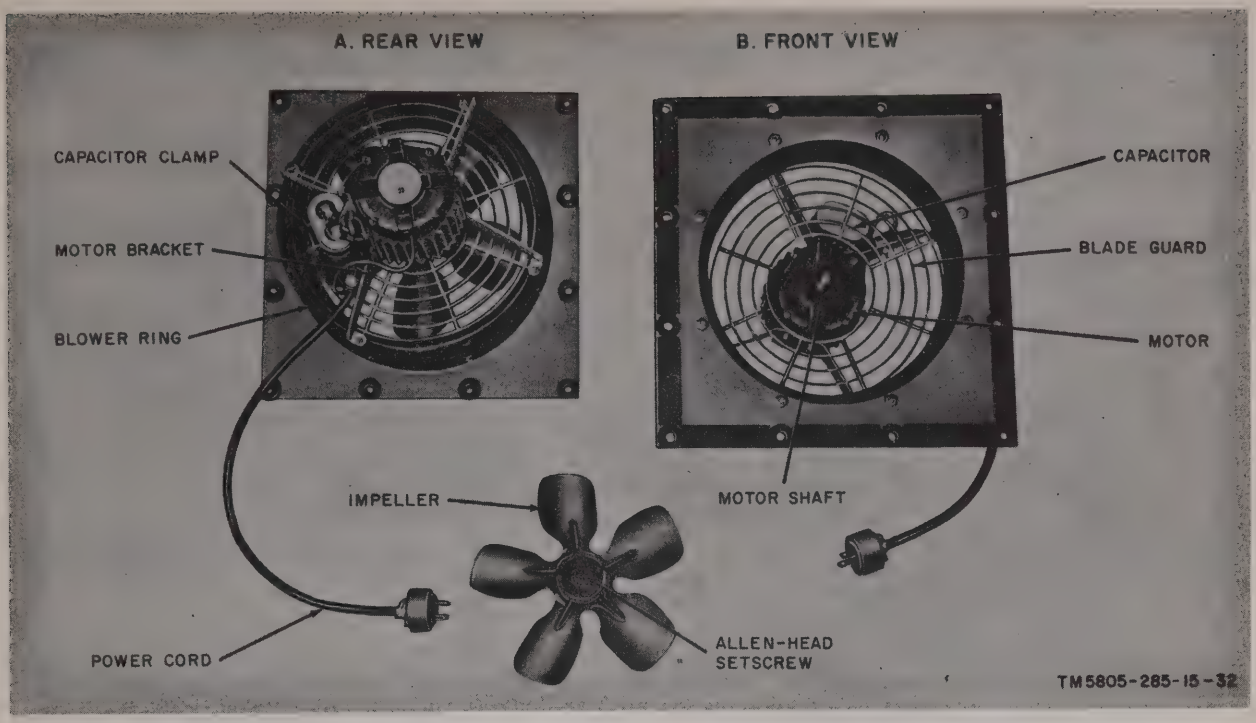


Figure 34. Exhaust blower, identification of parts.

leads from the capacitor and power cord.

(e) Remove the power cord clamp.

(f) Remove the four screws that secure the motor mounting bracket to the motor.

(g) Loosen the two Allen-head setscrews that secure the impeller to the motor shaft and remove the impeller.

(2) *Replacement.*

(a) Slide the impeller (setscrews toward the motor) onto the shaft of the new motor and tighten the setscrews.

(b) Secure the motor bracket to the new motor.

(c) Connect the motor leads to the capacitor and power cord (fig. 43).

(d) Replace the power cord clamp.

(e) Position the motor bracket and blade guard on the blower ring.

(f) Replace and tighten the bolts that secure the motor bracket and blade guard to the blower.

(g) Replace the exhaust blower by reversing the procedures in (1) (*a*) and (*b*) above.

(h) Replace the exhaust blower cover (para 48*b*).

59. Power Distribution Panel Repairs (fig. 35)

a. Preliminary Procedure. Operate the MAIN circuit breaker switch to OFF. Disconnect the ac power cable at the power and signal entrance box (fig. 17). Remove the four screws that secure the cover to the power distribution panel and remove the cover before performing the procedures in *b* through *d* below.

b. Removal and Replacement of Circuit Breakers.

(1) Grasp the defective circuit breaker and pull it straight out from the panel.

(2) Firmly press the replacement circuit breaker back into the panel.

c. Removal and Replacement of Current Transformer.

(1) *Removal.*

(a) Remove the four screws that hold each meter panel to the power distribution panel.

(b) Label and disconnect the current transformer leads from the meters.

(c) Remove the two bolts that secure the current transformer inside the panel and remove the current transformer.

Note. Count the number of turns of heavy black wire around the current transformer before proceeding with the next step.

(d) Disconnect the black wire wound around the current transformer from the MAIN circuit breaker and carefully unwind the wire from the current transformer.

(2) *Replacement.*

(a) Wind the black wire around the replacement transformer. Be sure the number of turns is the same as on the original transformer. Reconnect the black wire to the MAIN circuit breaker (fig. 39).

(b) Position the replacement transformer inside the panel and replace and tighten the bolts.

(c) Connect the transformer leads to the meters (fig. 39).

(d) Replace the meter panel and tighten the screws.

d. Removal and Replacement of Meter.

(1) *Removal.*

(a) Remove the four screws that hold each meter panel to the power distribution panel.

(b) Remove the bolts that hold the meter to the meter panel and lift out the meter.

(c) Label and disconnect the leads from the meter terminals.

(2) *Replacement.*

(a) Connect the leads to the replacement meter (fig. 39).

(b) Position the meter in the panel and tighten the bolts.

(c) Replace the meter panel.

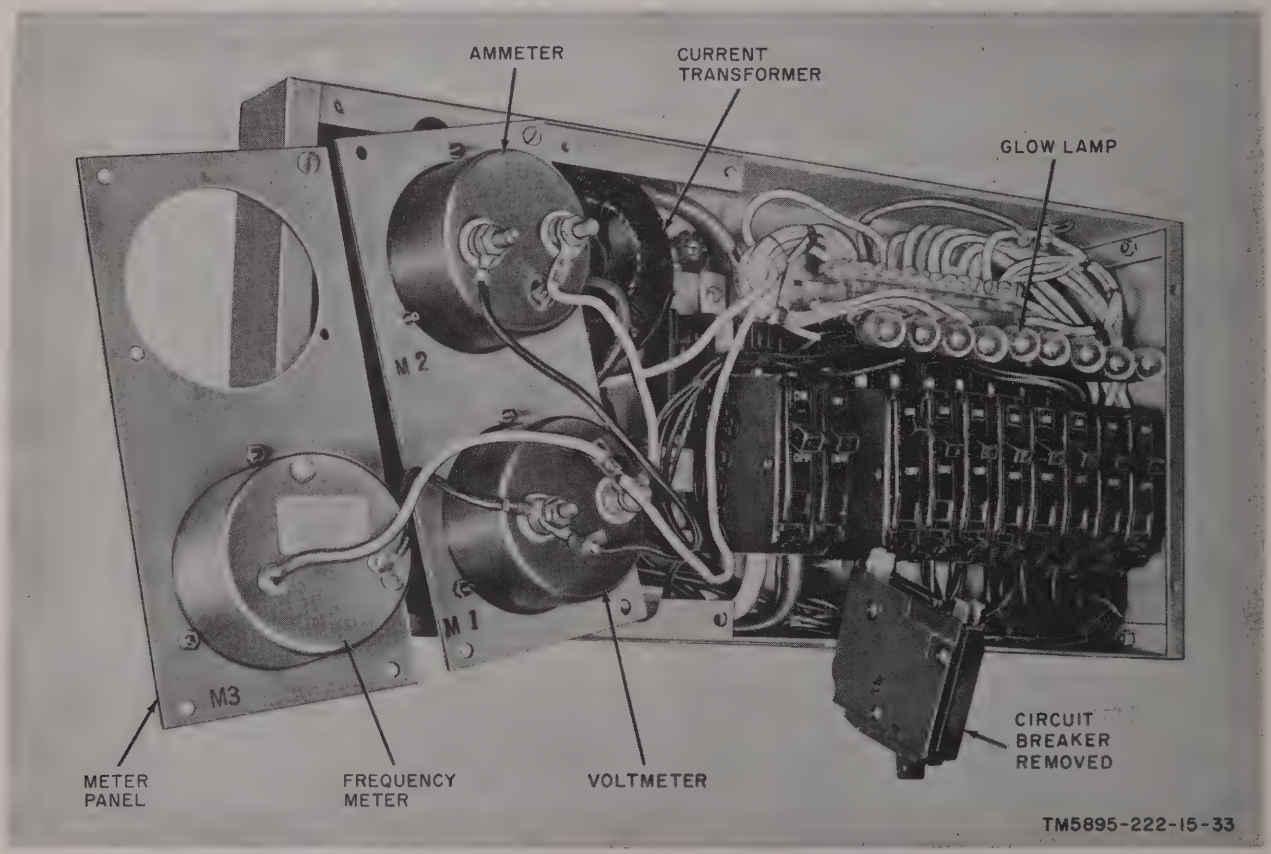


Figure 35. Power distribution panel, cover removed, identification of parts.

60. Removal and Replacement of 26–Pair Receptacle Insert

a. Removal.

(1) Remove the screws that fasten the cover to the power entrance panel (fig. 11); remove the cover.

(2) Remove the screws that secure the insert clips (fig. 36).

(3) Unfasten the cable clip nearest the the 26-pair receptacle mounting.

(4) At the power and signal entrance box (fig. 17), remove the 26-pair receptacle cover (para 31*a*(1)).

(5) Lift the receptacle insert (fig. 37) from the front of the 26-pair receptacle housing.

(6) Label and unsolder the wires from the receptacle insert.

b. Replacement.

(1) Connect the cable wires to the replacement receptacle insert (fig. 45).

Caution: Be extremely careful when connecting and soldering wires. Excessive heat or pressure will damage the insert.

(2) Carefully place the insert in the 26-pair receptacle housing (fig. 37).

Caution: Be careful not to damage the wires when replacing screws or when taking up slack in the 26-pair cable.

(3) Replace the four screws that secure the insert clip (fig. 36) to the 26-pair receptacle housing.

(4) Secure the cable form under the cable clip.

(5) Replace the power entrance panel cover and tighten the screws.

(6) Replace the connector cover (para 31*a*(2)).

61. LINE CONTROL–MONITOR–PATCH PANEL Repairs

(fig. 38)

Operate switches 5 through 8 in the panel distribution panel to OFF. Grasp the edge of LINE CONTROL-MONITOR-PATCH PANEL on the right side and pull to open.

a. Removal and Replacement of Milliameter.

(1) *Removal.* Label and disconnect the wires from the meter terminals. Remove the bolts that hold the meter to the meter panel pull out the meter.

(2) *Replacement.* Connect the leads to the replacement meter (fig. 40). Position the meter in the panel and tighten the bolts.

b. Removal and Replacement of CURRENT ADJUST Controls.

(1) *Removal.*

(a) Remove the knob by loosening the setscrew.

(b) Label and disconnect the wires from the three screw terminals on the rear of the control.

(c) Remove the hardware that secures the control to the panel.

(2) *Replacement.* Install the replacement control. The sequence for the replacement of parts is the reverse of the removal sequence ((1) above).

c. Removal and Replacement of Toggle Switches.

(1) *Removal.*

(a) Remove the two screws that hold the switch gang bracket (fig. 22).

(b) Label and remove the wires from the switch.

(c) Remove the hexagonal nut that holds the switch to the panel; remove the switch.

(2) *Replacement.* Replace the switch. The sequence for the replacement of parts is the reverse of the removal sequence ((1) above).

62. Removal and Replacement of Switches

a. Power Duct Switches.

(1) *Removal.*

(a) Operate the associated circuit breaker to OFF (fig. 39).

(b) Remove the screws from the brackets at each end of the switch. Remove the two brackets and the switchplate.

(c) Remove the switch mounting screws and the switch.

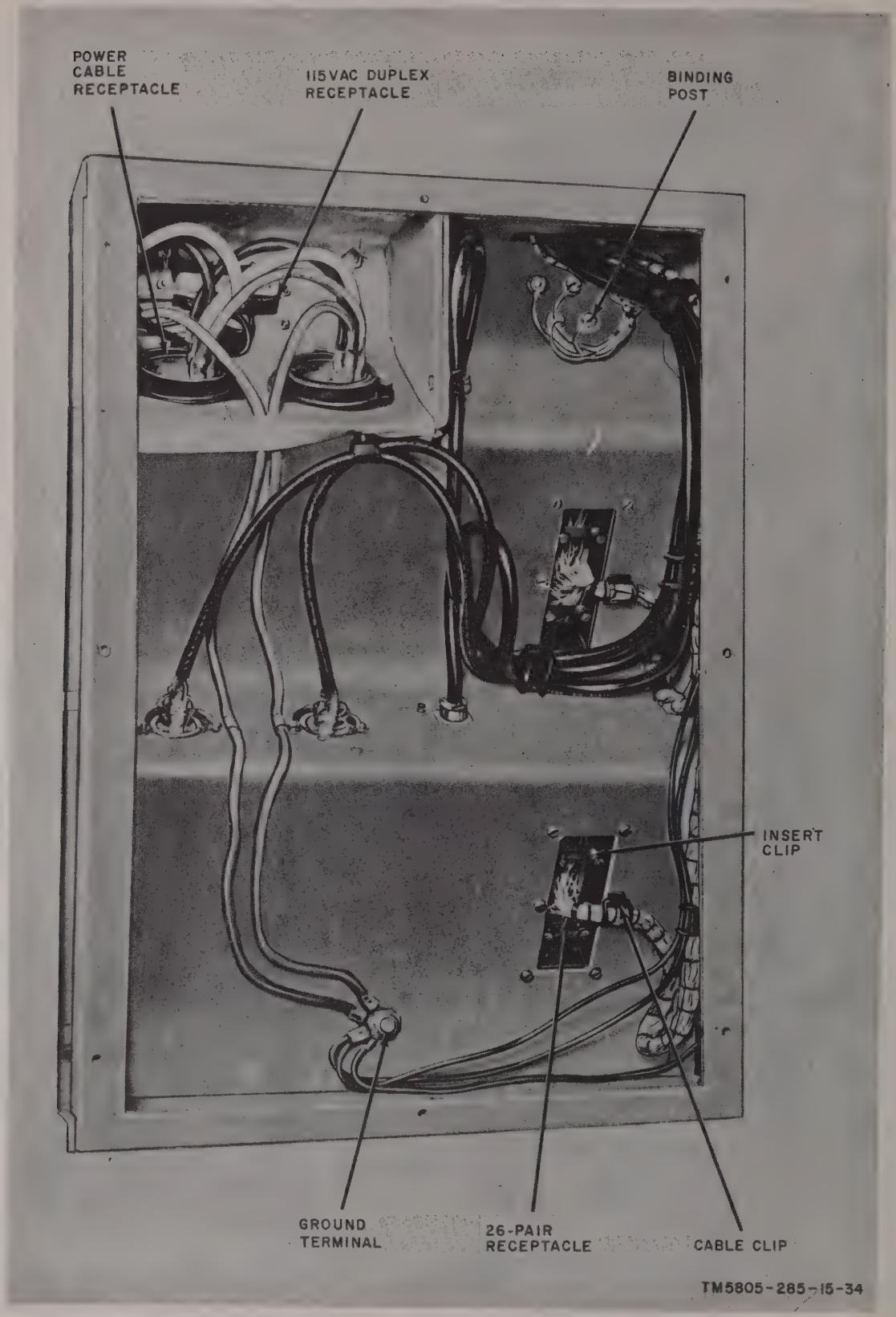


Figure 36. Typical identification of parts.

(d) Label and remove the wires from the switch.

(2) *Replacement.* Replace the switch. The sequence for replacement of parts is the reverse of the removal sequence ((1) above).

b. Door Microswitch.

(1) *Removal.*

(a) Disconnect the ac power supply to the shelter.

(b) Carefully pry off the duct cover from the power duct between the POWER INDICATOR NEON LAMP and the LIGHT 1 switch.

(c) Label and remove the wires from the N. O. and C. terminals of the switch (fig. 39).

(d) Unscrew the ringnut from the door side of the switch and remove the switch.

(2) *Replacement.* Replace the switch. The sequence for replacement of parts is the reverse of the removal sequence ((1) above).

63. Removal and Replacement of Fluorescent Light Fixture Components

Note. The fluorescent light fixtures are fabricated as part of the ceiling power duct. The radio-frequency (rf) filters are sealed units and cannot be repaired. They are replaced as a complete unit.

a. Removal.

(1) Operate the associated LIGHT switch to OFF. Remove the light shield and the flourescent lamp (para 46).

(2) Carefully pry off the cover from the power duct.

(3) Label and disconnect the wires from the defective component. Remove the component from the power duct.

b. Replacement.

(1) Secure the replacement component in the power duct.

(2) Connect the wires (*a*(3) above) to the replacement component.

(3) Replace the flourescent light fixture. The sequence for the replacement of parts is the reverse of the removal sequence (*a*(1) and (2) above).

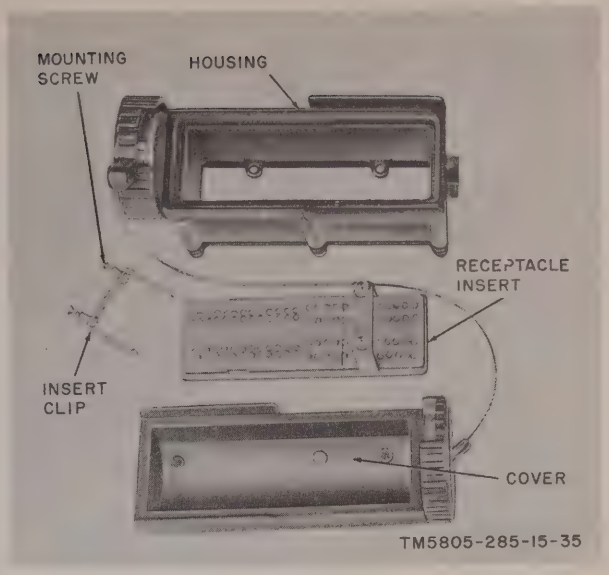


Figure 37. 26–pair receptacle, identification of parts.

64. Shelter Repairs (Third and Fourth Echelons)

a. The maintenance or repair of the S-182/MGC-19 racks, frames, brackets, and assorted hardware is accomplished by removing and replacing screws or bolts. When any exterior component of the shelter is replaced, be sure the gasket is adequately sealed to the shelter to prevent leakage. The responsibilities for shelter maintenance are listed in the maintenance allocation chart (appx II).

b. The exterior skin of the shelter is susceptible to puncturing or gouging during the loading and transportation procedures. Use Patch Kit, Shelter, Electrical Equipment (Federal stock No. 5410-783-6250) to repair the roof or sides of the shelter as described in the instructions provided with the patch kit and given below.

(1) Use emery cloth, sandpaper, a knife, or scraper and remove all paint or foreign matter within a 3-inch radius around the hole to be patched. Do not touch the cleaned area with hands or dirty rags.

(2) If the insulation has been gouged out, fill the hole with clean noncombustible material, if possible. *Do not use the glass cloth for this purpose.*

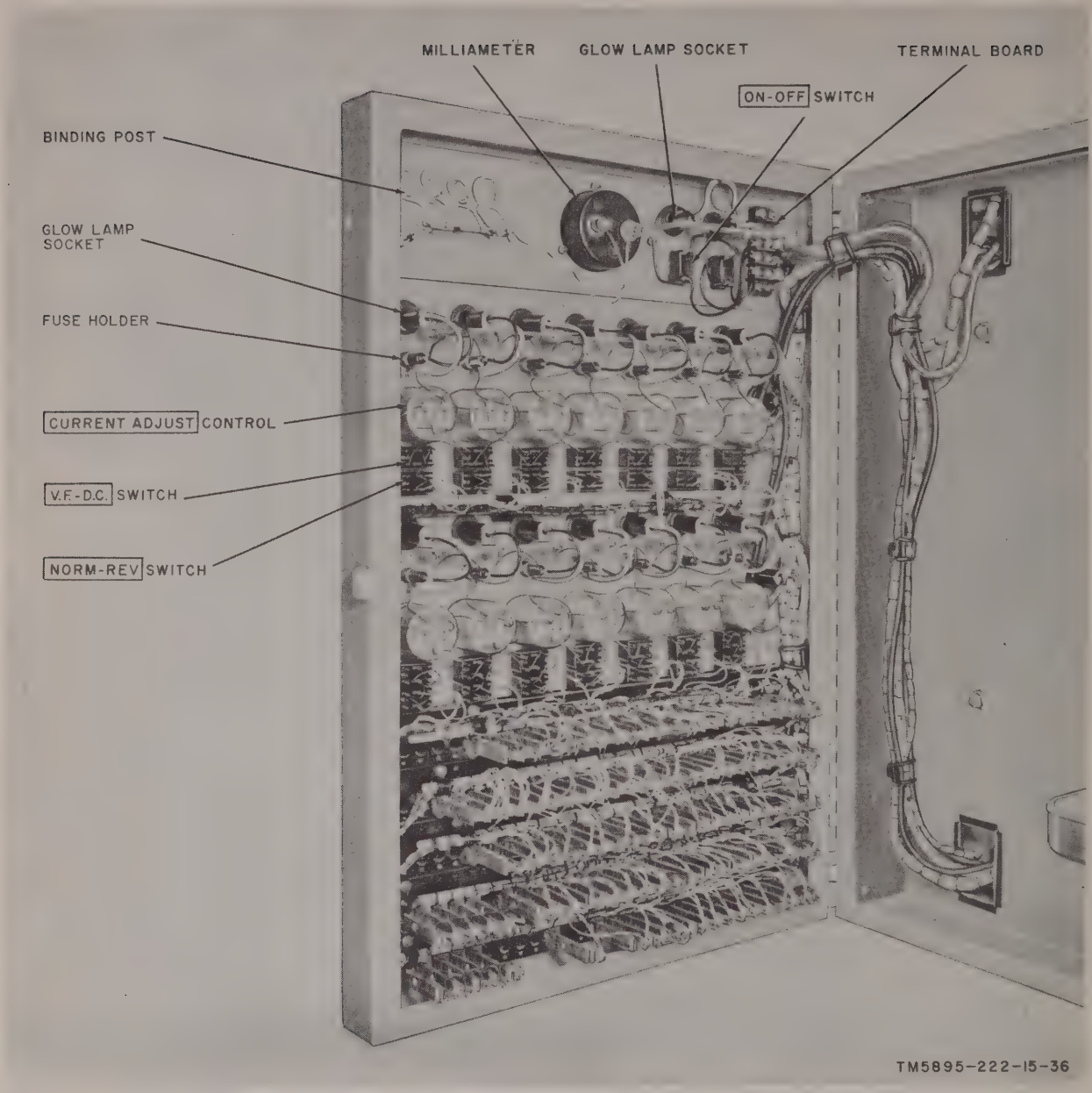


Figure 38. LINE CONTROL–MONITOR–PATCH PANEL, identification of parts.

(3) Cut out a piece of glass cloth that will extend two inches beyond the edges of the hole to be repaired.

Warning: Resin No. 797 and curing agent No. 237 are harmful to the skin. Wash thoroughly with water any area of the body that may have come in contact with the liquid resin or curing agent.

(4) Pour three ounces of resin No. 797 for each square foot of surface area to be covered into the mixing cup provided. Shake the can thoroughly before pouring out the resin. Temperature and climate will determine the quantity of curing agent and cold weather promoter to be added to the resin. Use the eye dropper provided and prepare the mixture as follows:

(a) For temperatures above 55° F, fill the eye dropper to the red line with curing agent No. 237.

(b) Add the curing agent to the resin and mix thoroughly.

(c) For temperatures between 20° and 55° F, fill the eye dropper to the red line with curing agent No. 237. Fill the eye dropper to the half-way mark with cold weather promoter No. 347. Add the cold weather promoter to the combined curing agent and resin and mix thoroughly.

(5) Use the spatula (or the brush in hard-to-reach areas or when the temperature is above 55° F) and spread a liberal coating of the prepared mixture over the surface to be patched. Place the glass cloth ((3) above) over the coating and press it lightly with the applicator. Spread a second liberal coating of the mixture over the glass cloth; work from the center of the patch towards the edges.

(6) Examine the patch to see that the edges are flat and firmly embedded in the mixture. Be sure the patch is *completely* covered by the mixture. Prepare and apply an additional mixture, if necessary.

Note. To accelerate during cold weather curing, heat the patch with warm, dry air or radiant heat. *Do not use an open flame or warm liquid!*

(7) Depending on the temperature and drying conditions, the patched surface may be sanded and painted within 4 to 24 hours after application. When the mixture on the spatula has hardened, flex the spatula to crack the mixture. Clean the cup and spatula and store them for future use. Discard the used brushes; recap and store the containers.

Caution: **Shelf life is severely limited by heat. Recap the containers tightly and store them in a cool dry place.**

CHAPTER 5
THEORY

65. General

a. The circuit capabilities of the AN/MGC-19 (fig. 1) depend on the arrangement of the TT-76(*)/GGC equipment. When the TT-76(*)/GGC equipment is arranged for half-duplex dc operation, 14 telegraph circuits are available; when it is arranged for full-duplex dc or vf operation, seven telegraph circuits are available. A patch panel provides facilities for arranging the circuits as required.

b. All power and signal connections are made on the outside of the shelter. The binding posts in the binding post signal entrance box are connected in parallel with the 26-pair cable receptacles in the power and signal entrance box.

c. Ac power within the shelter is controlled and distributed at the power distribution panel.

66. Signal Circuits (fig. 40)

The telegraph lines for the teletypewriter circuits in the shelter are connected either through pairs 1 through 14 in the 26-pair receptacle in the power and signal entrance box, or to line pairs 1 through 14 in the binding post signal entrance box. The receive circuits are connected to the even-numbered pairs; the send circuits are connected to the odd-numbered pairs. The circuits for position No. 1 are described in *a* through *c* below. The circuits for positions No. 2 through 7 are similar to those described for position No. 1.

a. Dc Full-Duplex Circuit.

(1) *Receive line circuit.* The cord(s) TT-76(*)/GGC is (are) connected to the RECEIVE jack(s) at the jack panel (A or B, fig. 31). Dc teletypewriter signals are applied to line 2 in the 26-pair receptacle J1 at the power and signal entrance box or to line 2 binding posts in the binding post signal box. The receive signal is routed through the LINE and EQUIP. jacks to the NORM.-REV. switch, DC MON jack, and V.F.-D.C. switch (operated to D.C. position) to the RECEIVE jacks in the jack panel. Dc power is connected to the circuit from rectifier No. 2R through FUSE ALARM glowlamp and fuse, CURRENT ADJUST control, and the V.F.-D.C. switch. Glowlamp DS16, when lighted, provides an indication of the presence of dc from the rectifier. Glowlamp DS2, when lighted, provides an indication of blown fuse F2. CURRENT ADJUST control R2 provides an adjustment of the current in the teletypewriter circuit.

(2) *Send line circuit.* The cords of the TT-76(*)/GGC are connected to the SEND jacks at the jack panel (A or B, fig. 31). The path of the dc teletypewriter signals and the function of the components in the circuit are the same as the receive line circuit ((1) above), except that dc power is applied to the circuit from rectifier No. 1R and the signal is applied to the SEND jacks in the jack panel.

b. Dc Half-Duplex Circuits. The cords of TT-76(*)/GGC No. 1 are connected to the RECEIVE jacks in the jack panel (A, fig. 31); the signal path is the same as described in *a* (1) above. The cords of TT-76(*)/GGC No. 2 are connected to the SEND jacks in the jack panel (A, fig. 31); the signal path is the same as described in *a* (2) above.

c. Vf Full-Duplex Circuits. The send and receive circuit is patched at the jack panel and patch panel as shown in C, figure 31. At the LINE CONTROL-MONITOR-PATCH PANEL, the V.F.-D.C. switch is operated to V.F. With this setup, the circuit paths are as follows for position 1:

(1) *Receive line circuit.* Vf teletypewriter signals are applied to line 2 in 26-pair receptacle J1 at the power and signal entrance box or

to line 2 binding posts in the binding post signal entrance box. The signals are routed through RECEIVE LINE jack, the patch cord and the TH-5/TG LINE 4W-R jack to the 4W-R binding posts of TH-5/TG No. 1. The vf signals are converted to dc signals in the receiving circuit of the TH-5/TG. The dc signals are applied from the REC jack of the TH-5/TG No. 1 through the patch cord, TH-5/TG LOOP REC jack on the jack panel, TH-5/TG LOOP REC jack on the patch panel, the patch cord to the RECEIVE EQUIP. jack on the patch panel, and through the receive cord (red) to the receive jacks on the jack panel.

(2) *Send line circuit.* The path of the vf signals for line No. 1 circuit is identical to the receive line circuit ((1) above).

d. Intershelter Communication Circuits.

(1) A telephone line is connected to the PHONE binding posts in the power and signal entrance box or pair 25 of the 26-pair cable receptacle in the power and signal entrance box. The telephone signals are applied through the signal duct wiring to the PHONE jack in the jack panel at position No. 1 and through the telephone cord to the TA-312/PT (TM 11-2155).

(2) An intercom line is connected to the INTERCOM binding posts in the power and signal entrance box or pair 26 of the 26-pair cable receptacle in the power and signal entrance box. The signals are applied through the signal duct wiring to the INTERCOM jack in the jack panel at position No. 1 and through the telephone cord to the LS-147C/FI (fig. 46).

e. Binding Posts Circuits. Spare line circuits are available at pairs 21 through 24 binding posts in the binding post signal entrance box or the 26-pair receptacle contacts (pairs 21 through 24) in the power and signal entrance box. Each spare circuit is wired to the LINE CONTROL-MONITOR-PATCH panel binding posts 21A through 24B and to SPARES LINE 21 through LINE 24 jacks.

67. AC Power Circuits

(fig. 39)

a. AC Power.

(1) Input power to the shelter is connected to IN POWER 115V AC receptacle J1 in the power and signal entrance box (para 27). Parallel-connected receptacle J2, OUT POWER 115v AC, is provided so that another area shelter may be connected to the same power source, provided the power rating of the power source is not exceeded.

(2) Power from receptacle J1 is applied through the power duct to MAIN circuit breaker switch CB10 in the power distribution panel. Power is applied to the shelter outlets and lighting through individual circuit breaker switches CB1 through CB9. Glowlamp DS10 is connected in parallel with circuit breaker switch CB10 and glows when current from the ac power source is applied to the shelter. A glowlamp indicator is connected in series with each circuit breaker switches CB1 through CB9.

b. Voltmeter, Ammeter, and Frequency Meters. Voltmeter M1 is connected across the ac input circuit and indicates the voltage applied to the AN/MGC-19 from the ac power source. The voltmeter has a 0-150-volt scale. Ammeter M2, connected to the ac input circuit through current transformer T1, indicates the total current consumed by the components of the AN/MGC-19. The ammeter has a 0-100 ampere scale. Frequency meter M3, connected across the ac input circuit, indicates the frequency of the ac power source. The frequency meter indicates from 50 to 70 cps.

c. RECTIFIER NO. ( ) 115 V.A.C. 60 CPS INPUT Switches. Ac power for each Rectifier RA(*)-87 is controlled by a switch on the meter panel. A glowlamp indicator in the panel associated with each switch glows when the switch is in the ON position.

CHAPTER 6
SHIPMENT AND LIMITED STORAGE AND DEMOLITION

Section I. SHIPMENT AND LIMITED STORAGE

68. Disassembly of Equipment

Perform the following procedures when the Teletypewriter Operations Central AN/MGC-19 is moved to a different location or placed in storage.

a. Turn off all equipment power switches and circuit breakers except LIGHT 1 and LIGHT 2 switches, circuit breaker switch 1 LIGHTS, and the MAIN circuit breaker.

b. Remove the batteries from the TA-312/PT, TS-297/U, and hand lantern for prolonged storage or long-distance shipment.

c. Secure all component items in their shelter cases, racks, mountings, or holders.

d. Remove and store all patch cords. Place all miscellaneous items in the storage drawers and secure the drawer and cabinets for transit.

e. Disconnect the field wires from the PHONE and INTERCOM binding posts in the power and signal entrance box (fig. 17).

f. Disconnect the 26-pair cable in the power and signal entrance box and replace the cover on the receptacle.

Note. The 26-pair cable is stored in the shelter from which it was originally connected.

g. Disconnect the field wires from the binding posts in the binding post signal entrance box (fig. 18). Close and secure the cover.

h. Operate the LIGHT 1 and LIGHT 2 switches; circuit breaker switch 1 LIGHTS and MAIN circuit breaker switch to OFF.

i. If power was obtained from the PU-294/G, proceed as follows:

(1) Stop the PU-286/G (TM 11-940A).
(2) Disconnect the power cable connector from the power cable stub. Replace both connector covers.
(3) Disconnect the power cable stub from the terminals of the PU-286/G and store it in cabinet No. 2.

j. If power was obtained from a commercial source, proceed as follows:

(1) Turn off or disconnect the power.
(2) Disconnect the power cable from the power cable stub. Replace both connector covers.
(3) Disconnect the power cable stub from the commercial source and store it in cabinet drawer No. 2.

k. Disconnect the power cable from the IN POWER 115v AC receptacle in the power and signal entrance box and replace the cover on the receptacle.

l. Disconnect the ground straps from the GROUND TERMINAL in the power and signal entrance box and the GND terminal on the PU-286/G. Close and secure the cover on the power and signal entrance box.

m. Disconnect the ground straps from the ground rods. Store the ground straps in cabinet drawer No. 2.

n. Close and secure the covers on the vents of the exhaust blowers and the air filter.

o. Remove the ground rods. Secure them in the shelter (fig. 11).

p. Wind the power cable and signal cable on the cable reels and secure the reels to the floor of the shelter (fig. 12) with the tiedown bar.

q. Recheck the area for loose items. Be sure that all items are properly stored in the shelter and in the PU-294/G.

r. Clean the shelter thoroughly. Check to see that the floor drain plug (fig. 12) is tightly closed.

s. Close and lock the shelter door.

69. Transportation

The AN/MGC-19 can be transported by truck or by helicopter. Refer to paragraph 25 for lifting, loading, and unloading instructions.

Caution: When transporting by air, the outside vent covers of the shelter must be opened to equalize the pressure inside and outside the shelter.

Section II. DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

70. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 71 will be used to prevent further use of the equipment.

71. Methods of Destructions

Use any or all of the following methods to destroy the equipment.

a. Smash. Smash the controls, tubes, coils, relays, switches, capacitors, transformers, and meters; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

b. Cut. Cut all cables and cords and slash the wiring on the components; use axes, handaxes, or machetes.

c. Burn. Burn cords and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

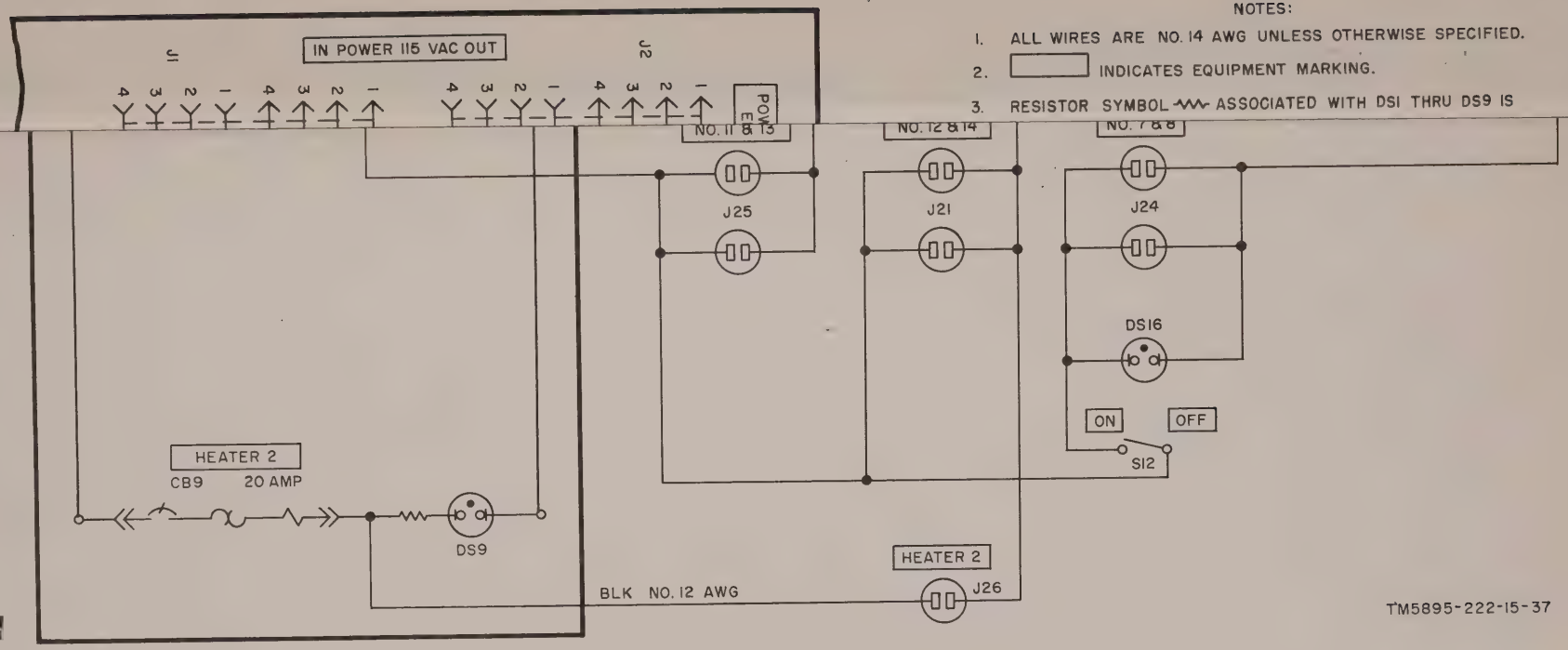
d. Bend. Bend panels and cabinets.

e. Explode. If explosives are necessary, use firearms, grenades, or TNT.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

NOTES:

1. ALL WIRES ARE NO. 14 AWG UNLESS OTHERWISE SPECIFIED.
2. [ ] INDICATES EQUIPMENT MARKING.
3. RESISTOR SYMBOL ~W~ ASSOCIATED WITH DS1 THRU DS9 IS



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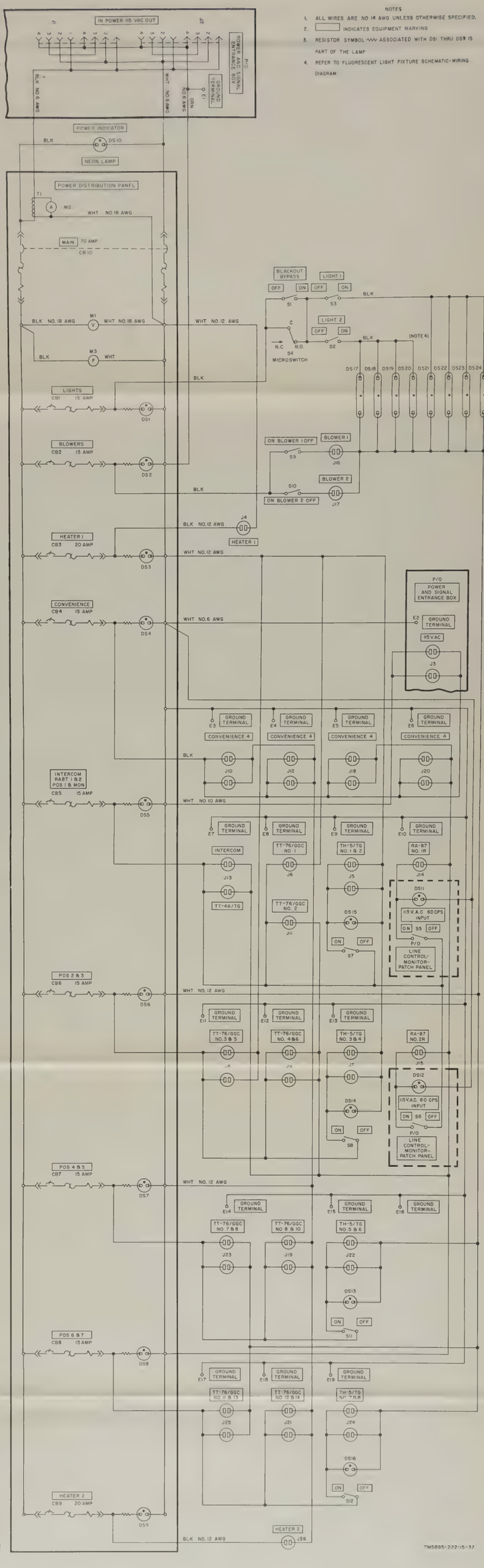


Figure 39. Teletypewriter Operations Central AN/MCC-18, power schematic-wiring diagram.

AL SYMBOLS FOR ALL JACKS LOCATED IN THE PATCH PANEL ARE GIVEN IN THE CHART BELOW.

N	SEND				TRANS SEND	TH-5/TG REC	LINE SEND	TH-5/TG SEND	LOOP SEND	TRANS REC	RECEIVE			
	LINE	EQUIP	VF	DC							LINE	EQUIP	VF	DC

AN/MGC-19, sign

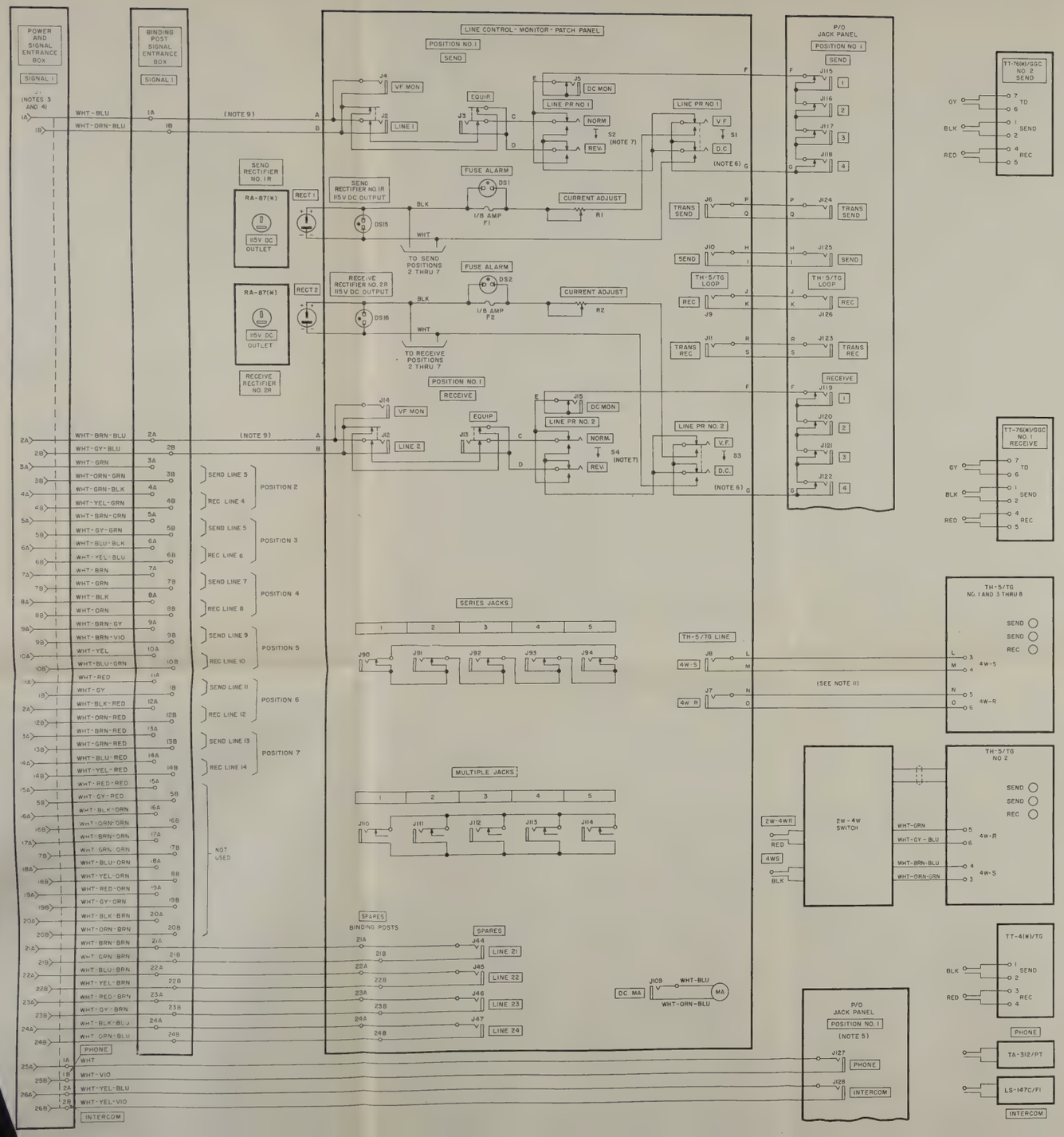
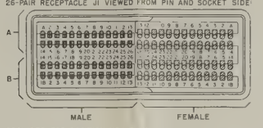


Figure 40. Teletypewriter Operations Central AN/MGC-19, signal schematic-wiring diagram.

NOTES

1. [ ] INDICATES EQUIPMENT MARKINGS.
2. ALL WIRING IS 26 GAGE UNLESS OTHERWISE INDICATED.
3. ONLY FEMALE ⟩ CONTACTS OF 26 PAIR CABLE RECEPTACLE J1 ARE SHOWN EACH FEMALE CONTACT IS CONNECTED IN PARALLEL WITH A MALE CONTACT ⟩
4. 26-PAIR RECEPTACLE J1 VIEWED FROM PIN AND SOCKET SIDE:



5. PROVIDED FOR POSITION NO.I ONLY.
6. SWITCHES S1 AND S3 SHOWN IN [V.F] POSITION
7. SWITCHES S2 AND S4 SHOWN IN [NORM] POSITION.

8. THE FUNCTIONAL SYMBOLS FOR ALL JACKS LOCATED IN THE POSITION JACK PANELS ARE GIVEN IN THE CHART BELOW.

POSITION NO.	SEND				RECEIVE				TRANS		TH-5/TG LOOP	
	1	2	3	4	1	2	3	4	REC	SEND	SEND	REC
1	J115	J116	J117	J118	J119	J120	J121	J122	J123	J124	J125	J126
2	J129	J130	J131	J132	J133	J134	J135	J136	J137	J138	J139	J140
3	J141	J142	J143	J144	J145	J146	J147	J148	J149	J150	J151	J152
4	J153	J154	J155	J156	J157	J158	J159	J160	J161	J162	J163	J164
5	J165	J166	J167	J168	J169	J170	J171	J172	J173	J174	J175	J176
6	J177	J178	J179	J180	J181	J182	J183	J184	J185	J186	J187	J188
7	J189	J190	J191	J192	J193	J194	J195	J196	J197	J198	J199	J200

9. THE FUNCTIONAL SYMBOLS FOR ALL JACKS LOCATED IN THE PATCH PANEL ARE GIVEN IN THE CHART BELOW.

POSITION NO.	SEND				TRANS SEND	TH-5/TG REC	LINE SEND	TH-5/TG SEND	LOOP SEND	TRANS REC	RECEIVE			
	LINE (-)	EQUIP.	VF MON	DC MON							LINE (-)	EQUIP.	VF MON	DC MON
1	J24	J25	J26	J27	J28	J29	J30	J31	J32	J33	J34	J35	J36	J37
2	J38	J39	J40	J41	J42	J43	J44	J45	J46	J47	J48	J49	J50	J51
3	J52	J53	J54	J55	J56	J57	J58	J59	J60	J61	J62	J63	J64	J65
4	J66	J67	J68	J69	J70	J71	J72	J73	J74	J75	J76	J77	J78	J79
5	J80	J81	J82	J83	J84	J85	J86	J87	J88	J89	J90	J91	J92	J93
6	J94	J95	J96	J97	J98	J99	J100	J101	J102	J103	J104	J105	J106	J107
7	J108	J109	J110	J111	J112	J113	J114	J115	J116	J117	J118	J119	J120	J121

10. THE FUNCTIONAL SYMBOLS FOR THE LINE CONTROL PANELS ARE GIVEN IN THE CHART BELOW.

CONTROL OR DESIGNATION	LINE PR. NO.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FUSE ALARM	DS1	DS2	DS3	DS4	DS5	DS6	DS7	DS8	DS9	DS10	DS11	DS12	DS13	DS14
FUSE	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14
CURRENT ADJUST	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
V.F-D.C. SWITCH	S1	S3	S5	S7	S9	S11	S13	S15	S17	S19	S21	S23	S25	S27
NORM-REV. SWITCH	S2	S4	S6	S8	S10	S12	S14	S16	S18	S20	S22	S24	S26	S28

11. SEVEN OPERATING POSITIONS ARE PROVIDED AND ARE IDENTICAL TO THE ONE SHOWN EXCEPT FOR THE [SEND] AND [RECEIVE] LINE NUMBERS. THE WIRE DESIGNATIONS, A, B, C, ETC., HAVE BEEN ARBITRARILY ASSIGNED FOR REFERENCE PURPOSES ONLY. COLOR CODING FOR THE [SEND], [RECEIVE], AND COMMON CIRCUITS OF EACH POSITION ARE GIVEN IN THE CHART BELOW.

LEAD DESIGNATION	WIRE COLORS													
	POSITION 1		POSITION 2		POSITION 3		POSITION 4		POSITION 5		POSITION 6		POSITION 7	
	SEND 1	RECEIVE 2	SEND 3	RECEIVE 4	SEND 5	RECEIVE 6	SEND 7	RECEIVE 8	SEND 9	RECEIVE 10	SEND 11	RECEIVE 12	SEND 13	RECEIVE 14
A	WHT-BLU	WHT-BRN-BLU	WHT-GRN	WHT-ORN-BLK	WHT-BRN-GRN	WHT-BLU-BLK	WHT-BRN	WHT-BLK	WHT-BRN-GY	WHT-YEL	WHT-RED	WHT-BLK-RED	WHT-BRN-RED	WHT-BLU-RED
B	WHT-ORN-BLU	WHT-GY-BLU	WHT-ORN-GRN	WHT-YEL-GRN	WHT-GY-GRN	WHT-YEL-BLU	WHT-GRN	WHT-ORN	WHT-BRN-VIO	WHT-BLU-GRN	WHT-GY	WHT-ORN-RED	WHT-GRN-RED	WHT-YEL-RED
C	WHT-YEL-BLK	WHT-BLK-BLU	WHT-RED-BRN	WHT-BRN-BRN	WHT-BRN-BRN	WHT-BLK-BRN	WHT-BRN-ORN	WHT-RED-RED	WHT-BLU-RED	WHT-BLK-RED	WHT-RED	WHT-BRN-GY	WHT-BLK	WHT-BLU-BLK
D	WHT-YEL-VIO	WHT-ORN-BLK	WHT-GY-BRN	WHT-GRN-BRN	WHT-GRN-BRN	WHT-ORN-BRN	WHT-GRN-ORN	WHT-GY-RED	WHT-YEL-RED	WHT-ORN-RED	WHT-GY	WHT-BRN-VIO	WHT-ORN	WHT-YEL-BLU
E	WHT	WHT-VIO	WHT-BLU-BRN	WHT-YEL-BRN	WHT-RED-ORN	WHT-GY-ORN	WHT-BLK-ORN	WHT-ORN-ORN	WHT-BRN-RED	WHT-GRN-RED	WHT-YEL	WHT-BLU-GRN	WHT-BRN	WHT-GRN
F	WHT-ORN-BLU	WHT-GY-BLU	WHT-ORN-GRN	WHT-YEL-GRN	WHT-GY-ORN	WHT-YEL-BLU	WHT-ORN-BLU	WHT-GY-BLU	WHT-ORN-GRN	WHT-YEL-GRN	WHT-ORN-BLU	WHT-GY-BLU	WHT-ORN-GRN	WHT-YEL-GRN
G	WHT-BLU	WHT-BRN-BLU	WHT-GRN	WHT-GRN-BLK	WHT-BRN-GRN	WHT-BLU-BLK	WHT-BLU-	WHT-BRN-BLU	WHT-GRN	WHT-GRN-BLK	WHT-BLU	WHT-BRN-BLU	WHT-GRN	WHT-GRN-BLK
H	WHT-BRN		WHT-BRN-RED		WHT-RED-ORN		WHT-BRN-GRN		WHT-RED		WHT-BRN-GRN		WHT-RED	
I	WHT-GRN		WHT-GRN-RED		WHT-GY-ORN		WHT-GY-GRN		WHT-GY		WHT-GY-GRN		WHT-GY	
J	WHT-BLK		WHT-BLU-RED		WHT-BLK-BRN		WHT-BLU-BLK		WHT-BLK-RED		WHT-BLU-BLK		WHT-BLK-RED	
K	WHT-ORN		WHT-YEL-RED		WHT-ORN-BRN		WHT-YEL-BLU		WHT-ORN-RED		WHT-YEL-BLU		WHT-ORN-RED	
L	WHT-BRN-GY		WHT-RED-RED		WHT-BRN-BRN		WHT-BRN		WHT-BRN-RED		WHT-BRN		WHT-BRN-RED	
M	WHT-BRN-VIO		WHT-GY-RED		WHT-GRN-BRN		WHT-GRN		WHT-GRN-RED		WHT-GRN		WHT-GRN-RED	
N	WHT-YEL		WHT-BLK-ORN		WHT-BLU-BRN		WHT-BLK		WHT-BLU-RED		WHT-BLK		WHT-BLU-RED	
O	WHT-BLU-GRN		WHT-ORN-ORN		WHT-YEL-BRN		WHT-ORN		WHT-YEL-RED		WHT-ORN		WHT-YEL-RED	
P	WHT-BLK-RED		WHT-BRN-ORN		WHT-RED-BRN		WHT-BRN-GY		WHT-RED-RED		WHT-BRN-GY		WHT-GY-RED	
Q	WHT-ORN-RED		WHT-GRN-ORN		WHT-GY-BRN		WHT-BRN-VIO		WHT-GY-RED		WHT-BRN-VIO		WHT-RED-RED	
R	WHT-RED		WHT-BLU-ORN		WHT-BLK-BLU		WHT-YEL		WHT-BLK-ORN		WHT-YEL		WHT-ORN-ORN	
S	WHT-GY		WHT-YEL-ORN		WHT-ORN-BLU		WHT-BLU-GRN		WHT-ORN-ORN		WHT-BLU-GRN		WHT-ORN-ORN	

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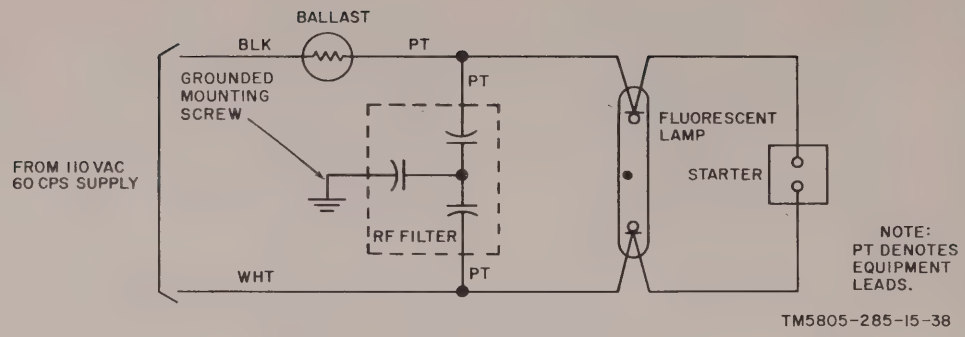


Figure 41. Fluorescent light fixture, schematic—wiring diagram.

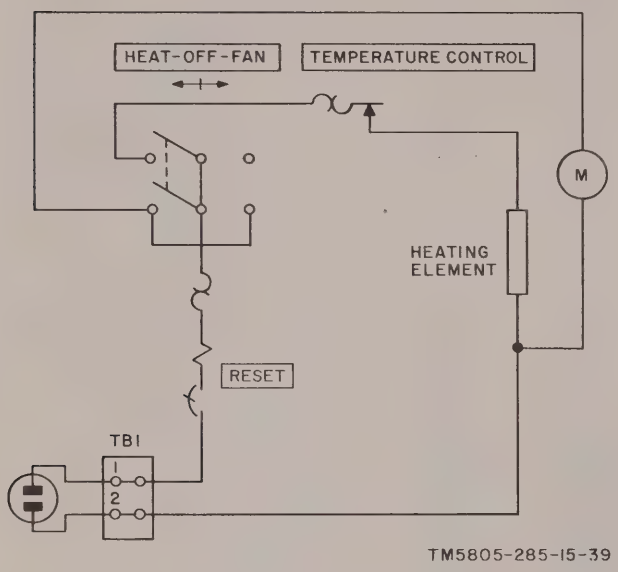
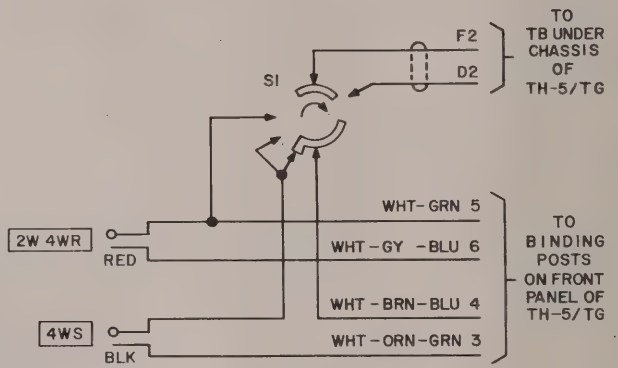


Figure 42. Electric heater, wiring diagram.



NOTES:

1. [ ] INDICATES EQUIPMENT MARKING.
2. ALL WIRING IS NO. 26 AWG.
3. S1 IS SHOWN OPERATED IN THE [FULL DX 4W] POSITION.

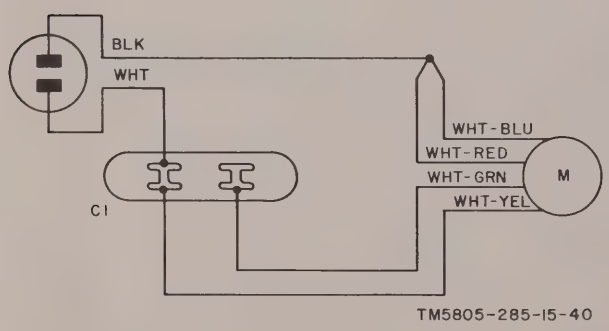


Figure 43. Exhaust blower, wiring diagram.

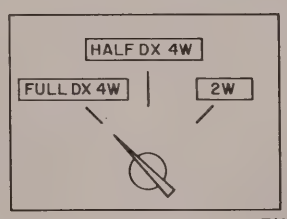
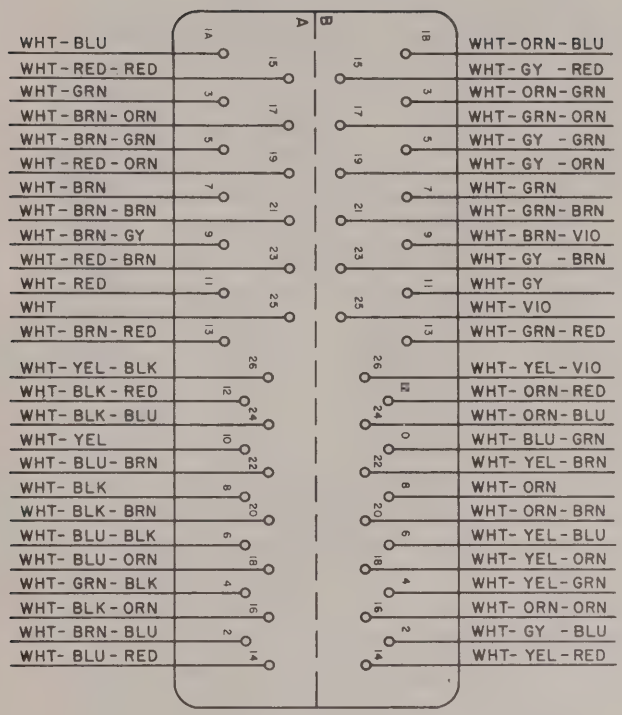


Figure 44. 2W—4W switch, schematic—wiring diagram.



NOTES

1. CONNECTOR AS SEEN FROM WIRING SIDE.
2. WIRES CONNECTED TO TERMINALS 1A AND 1B, 2A AND 2B ETC., ARE PAIRED WIRES.
3. BLUE AND RED SPARE WIRES (NOT SHOWN) ARE TURNED BACK AND SEWN INTO FORM.

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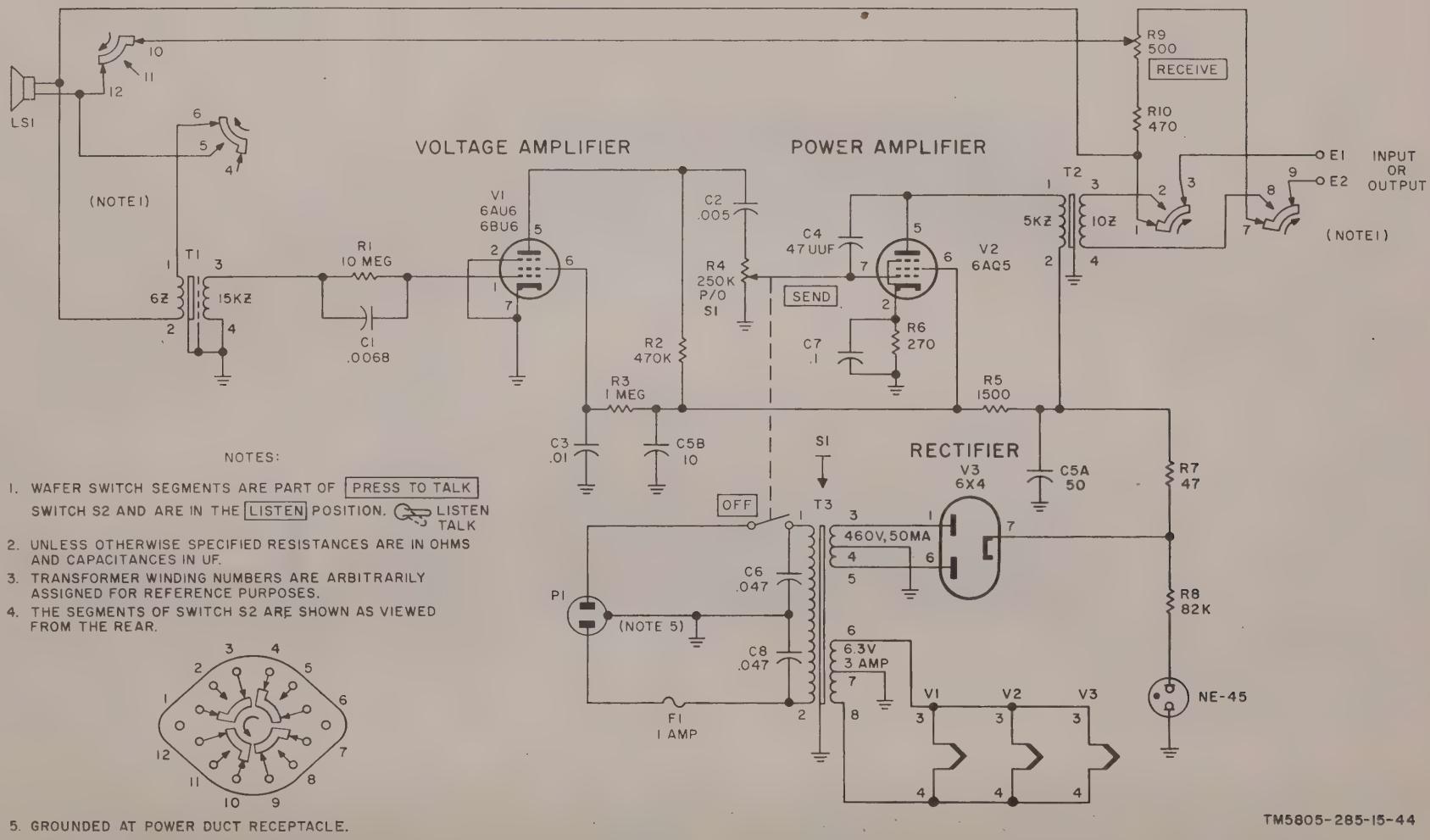
Figure 45. 26–pair receptacle, wiring diagram.



NOTES:

1. WAFER SWITCH SEGMENTS ARE PART OF PRESS TO TALK SWITCH S2 AND ARE IN THE LISTEN POSITION.
2. UNLESS OTHERWISE SPECIFIED RESISTANCES ARE IN OHMS AND CAPACITANCES IN UF.
3. TRANSFORMER WINDING NUMBERS ARE ARBITRARILY ASSIGNED FOR REFERENCE PURPOSES.
4. THE SEGMENTS OF SWITCH S2 ARE SHOWN AS VIEWED FROM THE REAR.

5. GROUNDED AT POWER DUCT RECEPTACLE.

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Figure 46. Intercommunication Station LS–147C/FI, schematic diagram.

APPENDIX I
REFERENCES

AR 320-5-1	Dictionary of United States Army Terms
AR 320-50-1	Authorized Abbreviations and Brevity Codes
AR 700-38	Unsatisfactory Equipment Report (Reports Control Symbol CSG1D-247 (R2))
AR 700-39	Electronic Failure Report (Reports Control Symbol CSGLD-803)
AR 700-58	Report of Damaged or Improper Shipment (Reports Control Symbol CSGLD-66 (Army), BuSand A 4600-6 (Navy), Reports Control Symbol 4600-3 (Marine Corps), Air Force Exempt under (para 7 (3)) (AFR 174-1))
DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides and Phono Recordings
DA Pam 310-series	Military Publications Indexes (as applicable)
FM 21-5	Military Training
FM 21-6	Techniques of Military Instruction
FM 21-30	Military Symbols
SIG 7 & 8 RA-87	Supply Manual for Rectifier
TM 11-940A	Gasoline Engine Generator Set PU-286/G and PU-286A/G
TM 11-957	Rectifier RA-87
TM 11-2138	Terminal Box TA-125/GT; Telephone Repeating Coil Assembly TA-145/GT; Maintenance Kit MX-842/GT; and Switchboard Signal TA-123/GT.
TM 11-2155	Telephone Set TA-312/PT
TM 11-2225	Teletypewriter Sets AN/GGC-3 and AN/GGC-3A, and Teletypewriter Reperforator-Transmitters TT-76/GGC, TT-76A/GGC, and TT-76B/GGC
TM 11-5500	Multimeter TS-297/U
TM 11-5805-201-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Telephone Set TA-312/PT
TM 11-5805-201-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Telephone Set TA-312/PT
TM 11-5805-246-10	Operator's Manual: Terminal, Telegraph TH-5/TG
TM 11-5805-246-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Terminal, Telegraph TH-5/TG
TM 11-5805-246-20	Organizational Maintenance Manual: Terminal, Telegraph TH-5/TG
TM 11-5805-246-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Terminal, Telegraph TH-5/TG
TM 11-5805-257-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Generators, Ringing, Hand G-42/PT and G-42A/PT
TM 11-5805-257-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Generator, Ringing, Hand G-42/PT and G-42A/PT
TM 11-5815-206-12	Operation and Organizational Maintenance: Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG and TT-4B/TG

TM 11-5815-206-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List: Teletypewriter Set AN/PGC-1 including Teletypewriters TT-4A/TG and TT-4B/TG
TM 11-5815-206-35	Field and Depot Maintenance; Teletypewriter Set AN/PGC-1 and Teletypewriters TT-4A/TG and TT-4B/TG
TM 11-5815-206-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Teletypewriter Set AN/PGC-1 including Teletypewriters TT-4A/TG and TT-4B/TG
TM 11-5815-238-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Teletypewriter Sets AN/GGC-3, AN/GGC-3A and Reperforator-Transmitters, Teletypewriter TT-76/GGC, TT-76A/GGC, and TT-76B/GGC
TM 11-5815-238-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Teletypewriter Sets AN/GGC-3, AN/GGC-3A and Reperforator-Transmitter Teletypewriter TT-76/GGC, -76A/GGC, and -76B/GGC
TM 11-5830-221-12	Operator's and Organizational Maintenance Manual, Intercommunication Station LS-147B/FI
TM 11-5830-221-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools Lists: Intercommunication Stations LS-147A/FI and LS-147B/FI
TM 11-5830-221-35	Field and Depot Maintenance Manual, Intercommunication Station LS-147B/FI
TM 11-5830-221-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Intercommunication Stations LS-147A/FI and LS-147B/FI
TM 11-5935-204-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Connector, Plug, Electrical U-185A/G
TM 11-5935-205-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Connector, Receptacle, Electrical U-187/G
TM 11-5965-224-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Handsets H-60/PT and H-165/I
TM 11-5965-224-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Handsets H-60/PT and H-165/U
TM 11-6625-321-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Multimeter TS-297/U
TM 11-6625-321-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Multimeter TS-297/U
TM 11-6110-201-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Distribution Box J-1077/U, J-1077A/U
TM 11-6115-202-10P	Basic Issue Items List: Generator Set, Gasoline Engine PU-286/G and Power Unit PE-197
TM 11-6115-223-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Generator Set, Gasoline Engine, Trailer Mounted PU-294/G

APPENDIX II
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions and repair operations to be performed by the lowest appropriate maintenance echelon.

b. Columns in section II, maintenance allocation chart, are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the part. Components and parts comprising a major end item are listed alphabetically. Assemblies and subassemblies are in alphabetical sequence with their components listed alphabetically immediately below the assembly listing.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelon capable of performing the operations.

(a) *Service.* To clean, to preserve, and to replenish fuel and lubricants.

(b) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(c) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(d) *Replace.* To substitute serviceable assemblies, subassemblies and parts for unserviceable components.

(e) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specificiations and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelon.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher then the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in section III, allocation of tools for maintenance functions, are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* A dagger ( ) indicates the echelons allocated the facility.

(3) *Tool guide.* This column lists the tool code assigned.

(4) *Remarks*. Entries in this column are used to clarify data in the other columns.

2. Maintenance by Using Organizations

When this equipment is used by signal service organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

3. Mounting Hardware

The basic entries of the maintenance allocation chart do not include mounting hardware such as screws, nuts, bolts, washers, brackets, clamps, etc.

Section II. MAINTENANCE ALLOCATION CHART

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19	service	X						Interior
			X					Exterior
								No adjustments (shelter)
	inspect		X				2,3	Interior and exterior
	test		X				1	Continuity, shelter signal and power circuits
	rebuild					X		
SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19	rebuild					X	2,3	
BRACKETS AND BRACKET ASSEMBLIES	replace				X			Fabricate
CABLE ASSEMBLIES	replace		X					
CABLE	replace		X	X			2,3	
CONNECTORS	replace		X				2,3	See spearate MAC for U-185/G connectors
CLOCK	replace		X				2	
CONDUIT ASSEMBLIES								
BALLAST, LAMP	replace		X				2	
CONNECTORS, RECEPTACLE, ELECTRICAL	replace		X				2	
FILTERS, RADIO INTERFERENCE	replace		X				2	
JACKS, TELEPHONE	replace		X				2	
LAMPHOLDERS	replace		X					
LAMPS	replace	X						
POSTS, BINDING	replace		X					
SHIELD, ELECTRIC LIGHT	replace		X					
STARTERS, LAMP, FLOURESCENT	replace	X						
SWITCHES	replace		X				2	
CORD ASSEMBLIES	replace		X				2	
CURTAIN BLACKOUT	replace		X				2	
FANS, VENTILATING								
CABLE, ELECTRICAL	replace		X				2	
CAPACITORS	replace		X				2	
CLAMP, CAPACITOR	replace				X			Fabricate
CONNECTORS, PLUG, ELECTRICAL	replace		X				2	
GASKETS	replace			X				Fabricate
IMPELLER, FAN	replace		X					
MOTOR	replace		X				2	
HEATER, SPACE, ELECTRICAL								
CABLE, ELECTRICAL	replace		X				2	
CONNECTORS	replace		X				2	
GRID, HEATING ELEMENT	replace		X			2	2	

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
AN/MGC-19 (continued)								
IMPELLER, FAN	replace		X				2	
MOTOR, ALTERNATING CURRENT	replace		X				2	
SWITCHES	replace		X				2	
JACK, PANEL ASSEMBLIES								
JACKS, TELEPHONE	replace		X				2	
LANTERN, ELECTRIC								
BATTERIES, BA-30	replace	X						
LAMP, INCANDESCENT	replace	X						
LIGHT EXTENSION								
LAMP, INCANDESCENT	replace	X						
PANEL LINE ASSEMBLY								
JACKS	replace		X				2	
PANEL, METER ASSEMBLY								
AMMETER	replace		X				2	
LAMPS, GLOW	replace	X						
LAMPHOLDERS	replace		X					
POSTS, BINDING	replace		X				2	
CAPS, NEOPRENE	replace		X				2	
FUSES	replace	X						
FUSEHOLDERS	replace		X				2	
KNOB	replace		X				2	
RESISTORS	replace		X				2	
SWITCHES	replace		X				2	
PANEL, POWER DISTRIBUTION								
CIRCUIT BREAKERS	replace		X				2	
LAMPS, GLOW	replace	X						
LAMPHOLDERS	replace		X				2	
METERS	replace		X				2	
TRANSFORMERS	replace		X				2	
PANELS, SIGNAL AND POWER ENTRANCE								

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
AN/MGC-19 (continued)								
CAPS NEOPRENE	replace		X					
CONNECTORS, RECEPTACLE, ELECTRICAL	replace		X				2,3	See separate MAC for U-187/G connector*
POSTS, BINDING	replace		X				2	
TERMINAL GROUND	replace			X				Fabricate
SHELTER								
DOOR ASSEMBLIES								
FILTERS, AIR CONDITIONING	replace		X				2	
FRAME, AIR FILTER	replace				X			Fabricate
GASKETS	replace			X			2	
GUARD, AIR FILTER	replace				X			Fabricate
HANDLES, DOOR	replace		X				2	
HINGE ASSEMBLIES	replace		X				2	
LATCH, DOOR	replace		X				2	
LOUVER ASSEMBLY	replace			X			2	
PANELS, DUTCH DOOR	replace				X		2	
EYEBOLT	replace		X				2	
LIFTS, TIE EYE	replace			X			2	
MOLDINGS	replace				X		4	
PLUG, DRAIN	replace		X				2	
SKIDS	replace				X		2	
STEPS, FOLDING	replace		X				2	
SUB-PANEL POWER DISTRIBUTION								
FUSES	replace	X						
FUSEHOLDERS	replace		X				2	
KNOB	replace		X				2	
LAMPS, GLOW	replace	X						
LAMPHOLDERS	replace		X				2	
RESISTORS	replace		X				2	
SWITCHES	replace		X				2	
TABLE TOP ASSEMBLIES	replace				X			Fabricate
TIE DOWN ASSEMBLIES	replace				X			Fabricate

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH.	(3) 2ND ECH.	(4) 3RD ECH.	(5) 4TH ECH.	(6) 5TH ECH.	(7) TOOL CODE	(8) REMARKS
AN/MGC-19			-				
MULTIMETER AN/URM-105*		†	†	†	†	1	*If not available use TS-297/U or TS-352/U
TOOL KIT, GENERAL MECHANIC		†	†	†	†	2	
SOLDERING IRON TL-117		†	†	†	†	3	

APPENDIX III

BASIC ISSUE ITEMS LIST FOR TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19

Section I. INTRODUCTION

1. Scope

a. This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as *part of* the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

b. Columns in section II, are as follows:

(1) *Source, maintenance, and recoverability code.* Not used.

(2) *Federal stock number.* This column lists the 11-digit Federal stock number. In the absence of a Federal stock number, an interim number, for example ††L8Ra41C-12 in the description column, indicates that a Federal stock number is being processed for assignment. The L number may be used in emergencies to identify items.

(3) *Designation by model.* Not used.

(4) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

(5) *Unit of issue.* The unit of issue is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

(6) *Expendability.* Expendable items are indicated by the letter X; nonexpendable items are indicated by NX.

(7) *Quantity authorized.* Under "Items Comprising on Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spares and Accessory Items", the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

(8) *Illustrations.* The numbers in the "Item No." column refer to the number designating the part as shown on the illustration listed in the *Figure No.* column. The numbers in the *Figure No.* column refer to the illustrations where the part is shown.

2. Batteries

Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
			TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19					
			TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19: A mobile teletypewriter operations central used as a taps relay switching center and for preparation of multi-address tape for use in Army Area Signal Center. Provides 8 full duplex or 16 half-duplex teletypewriter channels by means of voice frequency telegraph	ea	NX			
			TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19 (Basic component)	ea	NX	1		
	Ord thru AGC		TECHNICAL MANUAL TM 11-5895-222-15	ea	X	2		
	6115-635-5614		GENERATOR SET, GASOLENE ENGINE TRAILER MOUNTED PU-294/G	ea	NX	1		
	5830-752-5357		INTERCOMMUNICATION STATION LS-147C/F	ea	NX	1		
	5815-230-7257		RECTIFIER RA-87	ea	NX	2	9	1
	5815-503-2760		REPERFORATOR-TRANSMITTER, TELETYPEWRITER TT-76/GGC	ea	NX	14	8	1
			SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19: (S-141( )/G modified) ††L9Wa94-252	ea	NX	1	14	
	5805-543-0012		TELEPHONE SET TA-312/PT	ea	NX	1		
	5815-198-4438		TELETYPEWRITER TT-4A/TG	ea	NX	1	9	2
	5940-049-7850		TERMINAL BOX TA-125/GT	ea	NX	1	8	3
	5805-246-8734		TERMINAL, TELEGRAPH TH-5/TG	ea	NX	8	8	2
			SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19					
	4210-727-8111		AXE, PICK HEAD: 2-3/4 lbs; American Logging Tool Co part No. 276	ea	X	1	11	1
	7520-753-4807		BASKET, WASTEPAPER: Erie Art Metal part No. 36	ea	X	8	9	3
	6130-120-1020		BATTERY, DRY BA-30	ea	X	4		
	4940-752-2474		CABLE ASSEMBLY, POWER, ELECTRICAL: 15 ft lg; 1 Hubbell No. 9756 conn one end, 1 St-Carl conduit outlet other end; St-Carl part No. 666146-126	ea	X	1	2	1
	5995-752-2548		CABLE ASSEMBLY, POWER ELECTRICAL: 15 ft lg; 1 conn plug C6-60 one end, other end skinned and tinned; St-Carl pt No. 666147-683	ea	X	1	2	2
	5995-752-2512		CABLE ASSEMBLY, TELEPHONE: 2 ft lg, black cord; 1 PJ-047B each end; St-Carl pt No. 666148-206	ea	X	4	3	1
	5995-752-2497		CABLE ASSEMBLY, TELEPHONE: 4 ft 6 in lg; black cord; 1 PJ-047B plug each end; St-Carl pt No. 666148-208	ea	X	2	3	2

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS	
							FIGURE NO.	ITEM NO
			AN/MGC-19 (continued)					
	5995-752-2517		CABLE ASSEMBLY, TELEPHONE: 2 ft lg; red cord; 1 PJ-407B plug each end; St-Carl pt No. 666148-211	ea	X	4	3	3
	5995-752-2549		CABLE ASSEMBLY, TELEPHONE: 4 ft 6 in lg; red cord; 1 PJ-047B plug each end; St-Carl pt No. 666148-213	ea	X	2	3	4
	6410-752-2435		CABLE ASSEMBLY AND REEL: 22-1/2 in dia x 7-1/2 in w; C/O 1 Reel, cable RC-435/U and 100 ft Power Cable Assy; St-Carl pt No. 666148-414	ea	X	1	4	1
	7105-792-6330		CHAIR, FOLDING: Emeco Corp part No. 3501	ea	X	2	10	1
	7910-753-5256		CLEANER, VACUUM: hand type; 110v, 60 cyc, single ph; Hoover part No. 2830	ea	NX	1		
	6645-800-7094		CLOCK, AIRCRAFT, MECHANICAL: 3 in face; Wakman part No. 118-12-24-W	ea	NX	1	10	2
	7210-753-3043		CUSHION, CHAIR: 16-1/2 in lg x 13-1/2 in w x 1 in thk; St-Carl part No. 666144-901	ea	X	2		
	6110-649-8146		DISTRIBUTION BOX J-1077A/U	ea	X	1	8	4
	4210-270-4512		EXTINGUISHER, FIRE, CARBON DIOXIDE: 5 lb; Kiddie Model No. 5T-2	ea	NX	1	11	2
	4210-383-7128		EXTINGUISHER, FIRE, CARBON DIOXIDE: 2-1/2 lb; Kiddie Model 2-1/2 T-2	ea	NX	1	10	3
	5120-408-1481		EXTRACTOR, ELECTRON TUBE: basket type; f/7 pin miniature; Kellems Model No. TP-11-16	ea	X	1	11	3
	5120-293-2692		EXTRACTOR, ELECTRON TUBE: basket type; f/9 pin miniature; Kellems Model No. TP-13-16	ea	X	1	11	3
	6645-752-7902		FAN, VENTILATING, PROPELLER: f/exhaust; Rotron Mfg Co type No. KS802L	ea	X	2		
	4130-765-2361		FILTER, AIR CONDITIONER: p/o shelter; 17-3/4 in w x 15-3/4 in h x 1-7/8 in thk; Craig part No. 15119P1	ea	X	1		
			FIRST AID KIT: Sig dwg SM-C-349935 ††L9Wa94-90	ea	X	1	11	4
	5120-776-9917		GRIP, CABLE, JAW: bronze; approx 16 in lg; Economy model No. EQA(6-8P)	ea	X	13	2	3
	5120-776-9918		GRIP, CABLE, JAW: bronze; approx 12 in lg; Economy model No. EQA(26S)	ea	X	12	2	4
	5120-251-4489		HAMMER, HAND: blacksmith double face type; 8 lb; Woodings-Verona Tool Works part No. 15	ea	X	1	11	5
	5120-793-2027		HANDLE, HAMMER: hickory; 30 in lg; Woodings-Verona Tool Works part No. AW-30	ea	X	1	11	6
	4520-224-7909		HEATER, SPACE, ELECTRIC: 115 vac; Electromode part No. AAT-15A	ea	NX	2		
	5120-224-2510		KEY, SOCKET, HEADSCREW: f/drain plug; 5/8 in hex; 6-3/4 in lg; Standard Pressed Steel Model "unbrake" 5/8	ea	X	1	11	7

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
			AN/MGC-19 (continued)					
	5410-783-6680		LADDER, VEHICLE BOARDING: aluminum; 64-3/4 in lg x 18-1/2 in w; St-Carl part No. 666149-684	ea	X	1	12	1
	6230-729-9614		LANTERN, ELECTRIC: Justrite part No. 2106-7	ea	X	1		
	4940-752-2525		LEAD, ELECTRICAL: used f/grounding; 1-1/2 in w x 122 in lg o/a; St-Carl part No. 666147-692	ea	X	2		
	6230-752-2479		LIGHT, EXTENSION: molded rubber handle w/25 pt cord; GE type No. 107-S	ea	X	1	2	6
	5120-392-8355		PIN STRAIGHTENER, ELECTRON TUBE: tenite body w/2 steel inserts; f/7 and 9 pin tube; General Cement part No. 8655	ea	X	1	11	8
	5975-660-3662		ROD, GROUND: steel; 5 ft lg x 5/8 in dia; Hubbard part No. 2665	ea	X	2	11	9
	7520-162-6178		SHARPENER, PENCIL: Boston type L	ea	X	1	11	10
	6210-754-8134		SHIELD, LIGHT: f/flourescent fixture; styrene; St-Carl part No. 66147-309	ea	X	8		
	5410-805-5533		SLING, MULTIPLE LEG: f/shelter lifting and tie down; Craig part No. 14804G1	ea	X	1		
			RUNNING SPARES AND ACCESSORY ITEMS					
			TELETYPEWRITER OPERATIONS CENTRAL AN/MGC-19					
			SHELTER, ELECTRICAL EQUIPMENT S-182/MGC-19					
	5920-281-0205		FUSE, CARTRIDGE: 1/4 amp, 250v; MIL type F02GR125A	ea	X	8	10	4
	5920-280-4465		FUSE, CARTRIDGE: 1 amp, 250v; Littelfuse part No. 312001	ea	X	5	10	4
	6240-538-8447		LAMP, FLOURESCENT: 20w; 24 in lg; Sylvania part No. F20T12/SW	ea	X	2	5	1
	6240-179-1814		LAMP, GLOW: MIL type NE-45	ea	X	5	5	2
	6240-299-5876		LAMP, GLOW: MIL type NE-34	ea	X	1	5	3
	6240-155-7786		LAMP, INCANDESCENT: f/lantern; 2/4v; GE part No. PR-2; (mtd behind reflector in lantern)	ea	X	1		
	6240-143-3070		LAMP, INCANDESCENT: 50w; GE part No. 50A/RS	ea	X	1	5	4
	5410-783-6250		REPAIR KIT, ELECTRICAL EQUIPMENT, SHELTER: f/patching holes in shelter body; DeLorme Ind part No. 711	ea	X	1		
	6250-299-2884		STARTER, FLOURESCENT LAMP: Bryant Elec part No. FS-2	ea	X	6	5	5

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